ELEMENTS OF PHONETICS

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ELEMENTS OF PHONETICS

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ELEMENTS OF PHONETICS

ENGLISH, FRENCH & GERMAN

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TRANSLATED AND
ADAPTED BY

WALTER RIPMAN

FROM

PROF. VIËTOR'S

"KLEINE PHONETIK"

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PREFACE

THE growing demand for better instruction in modern languages and the consequent inquiries into the methods adopted in other countries have led many English teachers to consider how their pupils can best learn to pronounce French and German. The compilers of Grammars and First Courses have not been slow to take note of this tendency, and hardly a book of this kind has been issued in the last few years which does not supply a chapter on 'pronunciation.' Some, indeed, frankly refuse to do so, alleging that the teacher alone can supply the required help; this is no doubt true as far as the learner is concerned, but no aid is given to the teacher. In others we find certain 'rules,' of which many are quite wrong, and even an 'imitated pronunciation,' which has only to be read aloud by those familiar with the language to be at once rejected as a gross travesty.

But it is not only in connection with French and German that this unscientific treatment of the living sounds of speech has had grave consequences. In English the spelling of words represents a pronunciation that has long been superseded; the real language of sounds has developed unceasingly, the conventional

symbols have undergone but little change. Some of the irregularities of our spelling are obvious, and the representation of a variety of sounds by *ough* has been instanced many times. But the full extent to which the sounds and the signs are opposed to each other is hardly suspected by the untrained observer; and he is so much under the influence of the written form of words that he often refuses to accept the phonetician's accurate record of his speech as representing his pronunciation. Very few of those who have given no special attention to the sounds as such are able to give the pronunciation of the common words *was*, *had*, *of*, *the*, which they themselves are constantly using; and they are not a little shocked at hearing that they regularly drop *h* in the weak forms of *him* and *her*. When these and many other unexpected facts have been pointed out, the absolute inadequacy of the spelling as a guide to the pronunciation is clearly recognised, and the question is often asked, What is to be regarded as the standard? What is the 'best English'?

Opinions are still much divided, but a definite course must be taken. In England the capital has so long exerted a preponderating influence in life and in letters, an influence which shows no signs of waning, that we may confidently regard London (or southern English) speech as the standard. Not, of course, 'cockney' speech, but the speech of educated men and women. If in any particular case it can be determined what is the pronunciation of the clear majority of educated Londoners, this may be accepted as 'correct.' Unfortunately, the number of trained

observers is small, and it is consequently hard to obtain statistics; but in many cases one's own circle of acquaintances suffices for determining doubtful points. In France the same is true of good Parisian French; while in Germany the best Berlin speech, and, above all, the language of the stage as determined by a recent conference, are to be taken as the standard; the speech of Hanover contains so many provincial peculiarities that it cannot by any means be regarded as a model.

The object of this little book is to clear away many misconceptions that exist as to the spoken language of England, France and Germany. For English this has been done by Dr Henry Sweet, whose admirable *Primer of Spoken English* is, however, by no means as well known as it should be: and the Walter Crane Readers, written by Miss Dale, the first books for teaching English reading in which the spoken language is made the starting-point, whilst the conventional spelling is retained, should do much to bring about an improvement, particularly in preventing what is vaguely described as 'affected' or as 'slovenly' speech.

The term 'affected' usually refers to a manner of speech which is felt to be unlike that commonly employed by people belonging to the same class or set as the speaker, and which is regarded as an endeavour to improve on that speech. The speaker thus assumes an attitude of superiority, which causes the usual resentment. It is therefore obvious that the term is relative: what is 'affected' in one set may

excite no remark in another. This 'affectation' appears, as a rule, most strikingly in the pronunciation of certain words, which are then quoted in proof of the charge made. To the student of phonetics this is an indication of some value, but as yet little has been done to gather such expressions of opinion. We are unable to give a good account of the leading features of the academic, the sporting, or the clerical varieties of southern English speech, though these are spoken by members of the same social class; much less has any attempt been made to describe the dialects of 'cockney' English.

Those who use 'slovenly' speech may be said to represent the radical tendency; they yield unconditionally to the most recent developments of speech, many of which never obtain general acceptance. They have either had no careful training in their youth, or the attention they give to other matters has made them indifferent to this. In many cases such an explanation may be found for carelessness of utterance; but when slovenly speech is met with in the lecturer or preacher, it may well cause surprise, and the teacher of elocution is as necessary for correcting this defect as in questions of voice production.

This is not the place to discuss how far teachers and manuals of elocution are satisfactory. But it may be well to point out that the delivery of a public speaker must naturally differ from ordinary speech, just as the face-play and gestures of the actor differ from what we are accustomed to see in everyday life. The teacher of elocution will rightly insist upon perfect distinctness of speech; he will

give valuable directions for breathing, and for the use of varying pitch of voice to express the emotions; but he is altogether mistaken, if he denounces the ordinary speech of the educated as 'slovenly,' and he essays a hopeless task if he sets himself to check the natural progress of the language. It is right that he should adopt a conservative attitude; but he must be careful not to teach any particular pronunciation if he has reason to believe that it is not accepted by the majority of educated speakers; that is to say, if it is not standard English.

It does not seem to be quite generally understood that the development of language *is* a natural progress; and the word 'decay,' still sometimes applied to it, should be relegated to the limbo of forgotten grammatical terms and catch-words.

This book will, however, in all probability first be used by teachers of French and German, and to their notice it is specially commended. Of late years, in every serious discussion of the methods of teaching modern languages, it has been urged that a training in phonetics is not merely advantageous, but essential, if the teachers are English men and women, as they undoubtedly should be in the overwhelming majority of cases. The *Elements of Phonetics* are based on the well-known works of Professor Viëtor, one of the pioneers of the 'reform' movement. The proofs have been most carefully revised by him, as well as by Dr R. J. Lloyd, Honorary Reader in Phonetics, University College, Liverpool; by Miss Dale, author of the "Walter Crane Readers"; by

Dr H. Frank Heath; by Mr W. G. Lipscomb, M.A., Honorary Secretary of the Modern Language Association; by Mr H. W. Atkinson, M.A., of Rossall School; and by Mr A. T. Baker, B.A., Ph.D., of the County High School, Isleworth.

Teachers and students have in this book an elementary guide to a subject which cannot fail to interest them; a guide which is trustworthy, and will help the teacher to level the path of his pupils, and the student to gain an insight into the working of language which he could acquire in no other way.

The description of the 'Organs of Speech' (§§ 1-20) I have written myself; the rest is largely a translation of the corresponding part of the *Kleine Phonetik*. For shortcomings I accept full responsibility; the credit for most of what is good is due to Professor Viëtor, and to the friends already mentioned. For any suggestions which will make the book more lucid or more accurate I shall be very grateful.

WALTER RIPMAN.

LONDON,
Christmas, 1898.

NOTE

The changes made in the second edition are due to the kindly interest of Prof. Viëtor himself, and to valuable suggestions and criticisms contributed by Dr R. J. Lloyd, by Prof. A. T. Baker, and by Mr Raymond Weeks in *Modern Language Notes* (May 1903).

July 1903. W. R.

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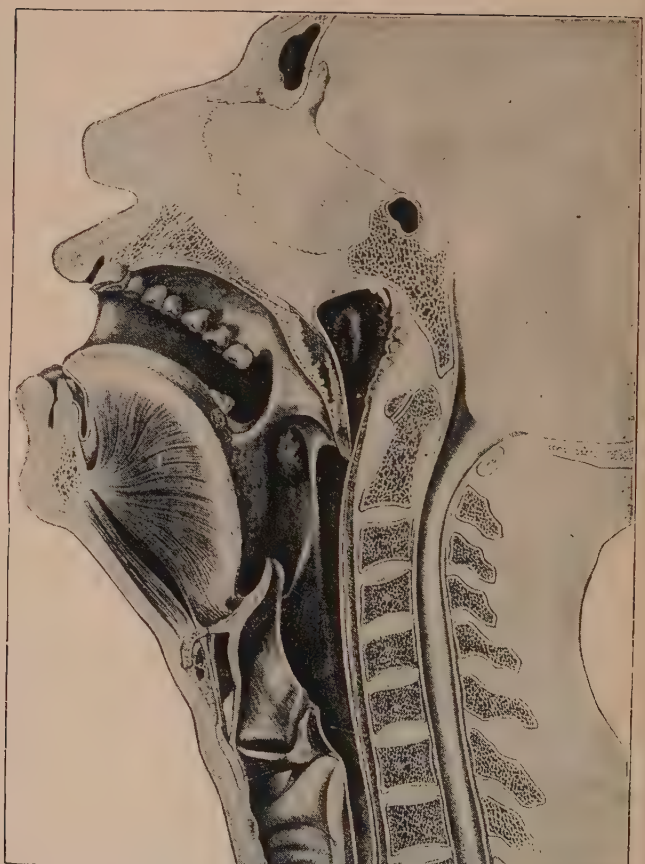


THE ORGANS OF SPEECH.

Plate III. in A. v. Luschka's 'Der Schlundkopf des Menschen,' reproduced by permission of the Publishers, Messrs H. Laupp & Co., Tübingen.

THE ORGANS OF SPEECH.

§ 1. THE current of air issuing from the lungs is the essential element of all speech. It is the rough material from which we obtain an endless variety of sounds, the current of air being acted upon by the articulations, which produce or modify sound.

We shall consider first the organs of breathing: diaphragm, lungs and windpipe; and then the organs of articulation and of resonance—the 'organs of speech' in a narrower sense—larynx, mouth and nose.

ORGANS OF BREATHING.

§ 2. In ordinary *breathing*, the diaphragm—which is convex if viewed from above (like the top of a balloon, roughly)—is flattened by muscular action and the ribs are expanded: the lungs have more room and air is drawn in; this is *inhalation*. Then the diaphragm reverts to its natural form; the space which the lungs can occupy becomes smaller and the air is forced out, after undergoing certain chemical changes which do not concern us here; this is *exhalation* or *expiration*.

As a rule the breath is drawn in and expelled through the nose, windpipe and the bronchial tubes

which communicate with the left and right lungs respectively ; the two processes take about the same time in breathing.

By means of the laryngoscope we can look right down the throat, and even see the branching off of the bronchial tubes ; see the diagram on p. 6.

§ 3. In *speaking* the conditions are somewhat different. As the exhaling of breath requires no muscular action, but merely implies the return of the diaphragm to what we may call its natural position, it is better suited for the production of speech than inhalation. Consequently certain muscles are employed to hasten the process of drawing in the breath and to prolong that of exhaling, as also to regulate the pressure of air in each case, according as the speech sounds to be uttered require it. The breath passes almost entirely through the mouth.

It is not impossible to speak by means of inhaled breath, and short words are sometimes produced in this way ; *e.g.* *no*, or the first sound in *oh dear*. But the expiratory stream of air is better adapted to speech, because speech is meant to carry sound to a distance from us.

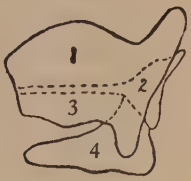
ORGANS OF ARTICULATION AND RESONANCE.

The Larynx.

§ 4. The upper part of the windpipe is called the *larynx*. As it is of particular importance for the production of speech, but cannot generally be examined as easily as the organs of the mouth, a somewhat detailed description will be necessary.

§ 5. The relative position of the larynx is clear from the plate opposite p. 1.

Its shape is due mainly to
the *thyroid* cartilage (or 'shield cartilage'), known also as the 'Adam's Apple,' No. 1 on the diagrams (on pp. 3 and 5).



It consists of a shield, the two halves of which are joined in front, forming an edge, which can be felt through the skin, and which is particularly noticeable in the case of men. At the back these 'halves' do not meet, but leave a space for
the *cricoid* cartilage (or 'ring cartilage'), No. 4 on the diagrams. This has roughly the shape of

a signet ring, with the signet behind; the front half of it can easily be felt underneath the lower edge of the 'shield' cartilage.

The two *arytenoid* cartilages ('adjusting cartilages') have a very irregular shape;[1] they are numbered 2 on the diagrams. With their base they rest on the 'signet' of the ring cartilage; and one side of each is attached to one of

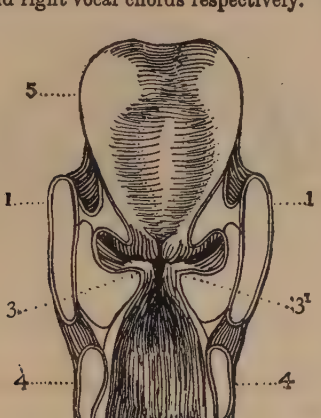
the two *vocal chords*. (The left diagram on p. 3 gives the cartilages only; the chords, numbered 3, appear in the right diagram, and in that on p. 5). These are horizontal membranes stretching from the 'signet' of the ring cartilage (where each is attached to one of the adjusting cartilages), to the inner edge where the halves of the shield cartilage meet. The vocal chords are connected with the left and right walls of the larynx respectively.

The interval between the vocal chords is called the *glottis*; we may further distinguish that part which lies between the adjusting cartilages as the *whispering* (or cartilaginous) *glottis*, the rest as the *voice glottis*.

§ 6. The following diagram is a transverse section of the larynx, the line of section being directly in front of that part of the adjusting cartilages which is connected with the vocal chords.

[1] As a matter of fact they have roughly the shape of a three-sided pyramid, though this is not obvious from the diagrams.

This clearly shows the narrowing of the larynx through which the breath has to pass. 1,1 are the 'half shields' of the thyroid, 4,4, sections of the ring cartilage; 3,3′ are the left and right vocal chords respectively. Immediately

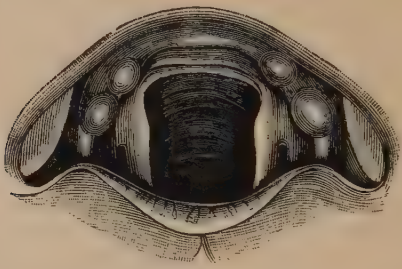


above them there is a narrow recess (the 'sacculus of Morgagni') and above it are the so-called 'false vocal chords,' which play no part in the production of speech.

§ 7. The larynx can be closed above by a kind of lid, the *epiglottis* (No. 5 on the diagrams, pp. 3 and 5); this is regularly done in eating and drinking in order to prevent the food from entering the windpipe.

§ 8. In ordinary *breathing* the epiglottis is raised and the glottis is open, so as to leave a free passage for the air. If we require an exceptional amount of

air, say for blowing out a candle, the glottis is opened to its fullest extent, as is shown in the following diagram.



Laryngoscopic view of the vocal chords opened to their widest extent, showing the windpipe to its bifurcation.

§ 9. In *speaking* the larynx plays a far more important part.

In the case of some sounds it is passive, remaining in the same position as for ordinary breathing.

Sometimes the glottis is narrow,[1] and the breath brushes past the edges of the vocal chords, which gives an [h] sound (see § 24). Or the chords are pressed closely together, the air is stopped for a moment and then bursts the closure. Then we have, according to the amount of energy expended, a 'glottal stop,' 'clearing the throat,' or 'coughing' (see § 32). These sounds do not, however, occur to any large extent in ordinary speech.

§ 10. Far the most important function of the vocal

[1] The way in which the adjusting cartilages can change the size of the glottis is shown in the note on p. 8.

chords is the production of *voice*, which is an essential element of the majority of sounds in ordinary speech.

When the vocal chords are brought near to one another and suitably stretched the current of breath is able to set them vibrating fast enough to produce a musical sound, which is here termed 'voice.' Those sounds which are produced by breath which has first set the vocal chords vibrating, *i.e.* sounds with 'voice,' are called *voiced*; and those in the production of which this vibration plays no part are *voiceless*.

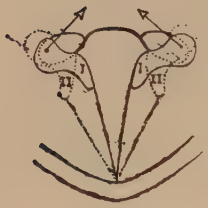
In *whispering* the voice glottis (see § 5) is closed, and the air passes through the whispering glottis only; there is hardly any difference of pitch, and the 'voiced' sounds of ordinary speech are uttered without 'voice.'

Note 1.—It is well to gain a clear idea of what is meant by 'voice'; and it is not hard to do so, as the vibration of the vocal chords may be felt in various ways. It is convenient to use pairs of sounds like [v, f], [z, s] or [ʒ, ʃ],[1] for we can continue them for some time. If then we utter the first of each pair, and place a finger on the throat, or close our ears, or put our hand on the top of our head, we shall notice quite distinctly that the chords are vibrating. If we then utter the second sound of each pair we shall miss the vibrations. The difference becomes very marked if we alternate between the voiced and voiceless sounds, saying, *e.g.* [zszszs], without making a break between them. When this has been tried with 'continuants,' the vibration in the case of voiced 'stops,' *e.g.* [g, d, b], will not escape notice; and the absence of 'voice' will also be recognised as the peculiar feature of whispered speech.

Note 2.—The explanation of the vocal chords given

[1] [ʒ] is the sound written **s** in leisure; [ʃ] is the sound usually written **sh**.

above has purposely been made in the simplest terms, and may suffice to give some idea of their function. It is, however, not without interest to see the way in which various muscles act on the adjusting (arytenoid) cartilages, so as to enable these to draw the vocal chords into various positions suitable to the exigencies of speech, singing and so on. The following diagrams are taken from Professor Alex. Macalister's *Textbook of Human Anatomy.*



Opening of the glottis, showing the action of the crico-arytenoideus positicus muscle, which draws the arytenoid cartilages from I, I to II, II.

Closing of the voice glottis, showing the action of the thyro-arytenoid muscles, drawing the vocal chords from II, II to I, I.

Closure of voice glottis and breath glottis showing the action of the arytenoideus proprius muscle, drawing the arytenoid cartilages from the neutral position I, I to the position II, II.

Note 3.—The whole range of the human voice is about four octaves ; but in any individual it is rarely more than from two to two and a half octaves.

The 'tone of voice' as a whole depends on the nature of the vocal chords : when they are relatively long and thick (as usually in men), the vibrations are slower and the voice deeper ; when they are shorter and thinner (as in women and children), the vibrations are more rapid and the voice higher.

Differences of pitch in the same voice are obtained by varying degrees of tension in the vocal chords, and of force in the current of air. A sound may be of uniform pitch and vary in loudness ; such variation is due to an increase or decrease in the force of expiration.

The Mouth.

§ 11. In discussing the organs of the mouth, it will not be necessary to give detailed descriptions ; for the inside of the mouth can be easily examined.

It is surprising how few people have ever looked well into their mouth. The student of phonetics should always have a hand-glass by his side, and should use it constantly, until he is quite familiar with the appearance of the 'oral' organs of speech. He will very soon find out the best angle at which to hold it, so that the mirror may at once reflect light into the mouth and enable him to watch it.

§ 12. The *pharynx* is the hollow space above the larynx, separated from it by the epiglottis (see § 7). It is at the same time the back part of the cavern of the mouth, from the rest of which it is separated (during nasal breathing) by

the *soft palate* or *velum*, the end of which is

the *uvula*, which can be clearly seen by means of a hand-glass. The soft palate passes over into

the *hard palate*; the difference can be easily noticed by letting the tip of the finger travel along the roof of the mouth from back to front.

§ 13. In *breathing* the velum hangs down as a rule, leaving a free passage for the air on its way through nose, pharynx, larynx, windpipe, bronchial tubes and lungs.

§ 14. In *speaking*, on the other hand, the velum in most sounds closes the nasal passage completely by pressing against the back surface of the pharynx; the breath can then pass through the mouth only. In some sounds, however, the velum is lowered, and breath passes through the nose as well as the mouth ("nasal vowels"); or the passage through the mouth is closed, and the breath can pass through the nose only ("nasals").

It is easy to determine whether a sound is oral or nasal, or both. A flat ruler is placed with one edge on the upper lip, with the other against cold glass. The breath as it issues will dim the glass; and therefore if the sound is nasal, the glass will be dimmed above the ruler. To ascertain the relative amount of oral and nasal breath in a vowel we require delicate instruments.

§ 15. When the current of air has caused the vocal chords to vibrate, and then passes out through the mouth without encountering any obstruction or check, the result is a *pure* or *oral vowel*; if the breath has not produced voice before passing through the mouth, we obtain the corresponding [h] sound (see §§ 26, 75).

If in the production of a sound the soft palate has not closed the passage through the nose, and some of the breath is allowed to escape that way, the result is a *nasal vowel.*

§ 16. The nature of the vowel varies according to the shape of the oral passage (the passage through the nose being invariable, except for the space above the soft palate). The inside of the mouth assumes different shapes, owing to changes of

the *tongue*: this is quite the most important instrument in modifying the current of breath, and thus causing variety in vowels. It is capable of assuming many shapes; some may be seen in the transverse sections on pp. 28, 29. We distinguish the *point* of the tongue, the *blade* (above and behind the point when the tongue lies flat), the *front* (yet farther behind), and the *back*; also the *ridge* or *dorsum* (an imaginary line drawn along the middle of the top of the tongue from end to end), and the *rims* (running down both sides of the tongue when it lies flat).

The *lips* also vary in shape, and thus modify the quality of vowels. As may be seen from the diagrams opposite p. 27, the corners of the mouth can be drawn far back, the lips may be left as in breathing through the mouth, or they may be rounded till only a very small opening is left; there are obviously numberless intermediate stages between these.

The *lower jaw* is lowered to various degrees; usually this coincides with a change of tongue posi-

tion. The lowering (or the angle of the jaws, or the distance between the rows of teeth) is generally greatest when the tongue is flat, and smallest when some part of the tongue is raised to its utmost.

In ordinary breathing the rows of teeth and the lips are closed, and the tongue fills almost the whole of the mouth.

§ 17. The current of air, with or without 'voice,' may not have a free passage: it may have to make its way through a narrowing, or to force its way through an absolute stoppage. Sounds thus produced are called (voiced or voiceless) *consonants*.

There may be merely a narrowing. Then the breath brushes past; there is friction; we may continue the sound as long as our breath lasts. The result is a (voiced or voiceless) *continuant* (or fricative).

The passage may be completely closed. The breath is stopped for a moment or for a little time (applosion); but then it bursts through the obstacle with a little explosion. The result is a (voiced or voiceless) *stop* (or plosive or explosive). When the breath issues through the nose, it is a (voiced or voiceless) *nasal*.

In a final stop the applosion is the chief sound.

§ 18. This narrowing or closure may take place in many parts of the mouth.[1]:

between the back of the tongue and the soft palate, back (velar) continuants, stops, nasals;

between the front of the tongue and the hard palate, front (palatal) continuants, stops, nasals;

between the point (or blade) of the tongue and the

[1] For examples of these sounds see the table on pp. 18, 19.

upper teeth, or the ridge (called 'alveoles') above the upper teeth,

dental (point, lingual) continuants, stops, nasals;

between the lower lip and upper teeth,

labiodental (lip-teeth) continuants, stops;

between the lips,

bilabial (lip-lip) continuants, stops, nasals.

§ 19. Little remains to be said about

The Nose.

It has been pointed out that in *breathing* the velum is lowered so as to leave a free passage for the breath.

In *speaking* the nose plays a subordinate part, as it serves only to give a passage to breath in the nasal vowels and the nasals.

The resonances of the hollows of the nose are nearly invariable, as the shape of these hollows is subject to little change.

> In English speech, and generally in singing, most vowels have some nasal resonance, due to the passage through the nose not being firmly closed by the velum. In speech it is not usually noticed, when it is slight; when it is marked, we call it a 'nasal twang.' Singers use it because the additional resonance adds to the sonority of the voice; but such voice production is faulty.

NOTE

§ 20. A few common misconceptions may here be mentioned.

No sound is produced 'in the chest' or 'in the head': a man may speak as though his voice came from his boots, and a 'ventriloquist' may pretend to talk ventrally, but no sound is produced lower than the 'Adam's apple.'

We say 'he is speaking through his nose' when a person has a bad cold. The exact opposite is the case, for the passage through the nose is obstructed and the breath cannot make its way through it. The most obvious result is the substitution of *g*, *d*, *b* for *ng*, *n*, *m*.

It is sometimes maintained that children have an innate aptitude for learning the language of their country: but a child will learn the language of the people who take care of it, even though it be quite different from that of its parents, and will learn it just as well as a native child.

The pronunciation of a foreign language cannot be learnt by means of an 'imitated pronunciation,' such as is supplied in numerous Elementary Grammars, First Courses, etc. It is impossible to represent the sounds of one language by means of symbols which are used in another language to designate sounds only approximately like them. Thus *foh* appears in one of these books for the French *faut*, and *clay* for *clef*;

in both cases the reader who has no further help will pronounce diphthongs in place of the simple long vowels, and in the second word a *cl* with *c* so far forward as almost to become a *t*, and certainly with an English *l*.

THE SEPARATE SOUNDS.

Designation of Sounds.

§ 21. To avoid the necessity of constantly repeated descriptions, we must be able to express each sound by a clear and unmistakable symbol; we require a phonetic alphabet. The current spelling of English, French and German will not serve our purpose, for it is inconsistent (*e.g.* English *n*o*t* and w*h*a*t*, French *s*i and i*c*i, German *v*or and *f*ür), or awkward and inadequate (*e.g.* English *th*in, French m*on*, German *sch*ön).

In this book a phonetic transcript [in square brackets] is therefore employed, and it is the alphabet of the International Phonetic Association (the journal of which is *Le Maître Phonétique*, edited by Dr Paul Passy, 20 rue de la Madeleine, Bourg-la-Reine). The following table contains the symbols for such sounds as we shall meet with in English, French and German speech; the value of those symbols which are not familiar will become clear as we proceed.

Clarendon type is employed to represent letters and words in the conventional spelling.

		lips	*lip and teeth*	*point of tongue*
CONSONANTS	*with closure* — *stops*	b p		d t
	with closure — *nasals*	m m̥		n n̥
	with narrowing — *liquids* — *lateral*			l l̥
	with narrowing — *liquids* — *trilled*			r r̥
	with narrowing — *continuants*	w ʍ ɥ ɥ̥ v ɸ	v f	ð θ z s ʒ ʃ
VOWELS	*tongue highest*	(y u)		
	tongue half-way	(ø o) (œ ɔ)		
	tongue lowest			

ₒ (*e.g.* in m̥, n̥) means 'voiceless'; French **prisme** [prism̥].

: indicates length; English **half** [hɑ:f], French **inné** [in:e].

˘ over a symbol means 'not syllabic'; English **now** [naŭ].

' (preceding) indicates **accent (stress)**; English **balloon** [bə'lu:wn].

Sounds.

front of tongue	*back of tongue*	*uvula*	*glottis*
g k			ʔ
ɲ ɲ̥	ŋ ŋ̊		
		R R̥	
j ç	g x		h
i (y)	(ü) (u)		
e (ø)	ɵ (ö) (o)		
ɛ (œ)	(ɔ)		
æ ʌ			
a ɑ			

nasal vowels: ɑ̃ ɛ̃ ɔ̃ œ̃; thus French **lent** [lɑ̃], **fin** [fɛ̃], **long** [lɔ̃], **un** [œ̃].

( ) indicates lip rounding.

˕ after a vowel means 'more open.'

˔ after a vowel means 'more close.'

ARTICULATION OF THE LARYNX.

1. Full opening of glottis.

§ 22. When the glottis (the interval between the vocal chords) is fully opened, the breath passes through without producing any audible sound.

Sound may, however, be subsequently produced when the breath reaches the articulations of the mouth, and the nose.

2. Slight opening of glottis and closure of glottis.

§ 23. Notice the production of 'voice,' described above in § 10; it is not a speech-sound of itself, but an important part of many such sounds, which are hence called *voiced*; the rest are *voiceless*.

Slight opening of glottis.

§ 24. If the glottis be made sufficiently narrow, the breath brushing past the edges of the vocal chords produces a voiceless glottal continuant (or fricative), which we must not at once identify with the Greek 'spiritus asper' or our own h. The phonetic symbol is [h].

There are many possible varieties of it: the current of breath may vary in force, the glottis may vary in narrowness; or, again, the current of breath may remain of the same force throughout, or its force distinctly increase or decrease; or the glottis may remain the same throughout, or become narrower and narrower; and so on. When the current is very considerable and the glottis very narrow, we have what is known as 'wheezing.'

§ 25. It is possible to produce a voiced [h] sound: the voice-glottis (see § 5) is allowed to vibrate, and the cartilaginous glottis is opened as for whispering. Thus 'voice' and the [h] sound are formed at the same time. Symbol [h̬].

§ 26. Apparently the glottal continuant [h] does not occur in English, French or German in ordinary speech: as a rule the various sounds which are written h start with the glottis open, and it does not become narrow until the production of the following vowel. The sound of this h results from the breath passing through the mouth when its articulations have already 'got into position' for the vowel that is going to be uttered. Indeed, this h may be regarded as unvoiced [ɑ], [e], etc., according as the following vowel is [ɑ], [e], etc.

§ 27. As, however, h is felt to be a consonant of uniform value, and as indeed in emphatic diction the continuant [h] is actually used (in place of, or together with, the sounds just mentioned), we shall proceed to discuss [h] here.

§ 28. [h] varies according to the nature of the current of breath.

If the current begins with full force for the [h], and passes undiminished to the vowel, we have the simple [h]; this is its common form in German.

If the current distinctly diminishes before the vowel is sounded, we obtain the usual English form of [h], more accurately [h>], or better still [<h>].

If on the other hand the current is weak at first, and does not reach the maximum of force until the sounding of the vowel, the resulting 'soft breath' no longer suggests a distinct [h]; it may then precede an initial vowel without being felt as a separate sound. We may designate it [h<] or simply [<].

§ 29. ENGLISH [h] (more accurately [h>] or [<h>]): **hold** [hoŭld] ([h>oŭld] [<h>oŭld]), occurs only at the beginning of words; and before accented vowels.

It is lost in enclitics when these are unaccented ('weak forms'), except at the beginning of a sentence.

	weak	*strong*
had	[əd	hæd]
has	[əz	hæz]
have	[əv	hæv]
he	[ij	hij]
her	[ə	hə:]
him	[im	him]
his	[iz	hiz]

Written **h** is mute in **heir** [ɛə], **honest** [ɔnist], **honour** [ɔnə], **hour** [aŭə], and their derivatives; also in **John** [dʒɔn].

> Some say **a history**, but **an historical novel**, **a habit**, but **an habitual action.**

A 'soft breath' (see § 28) usually precedes the initial vowel of a word: **old** [oŭld], more accurately [<oŭld].

§ 30. FRENCH in regular speech has no [h]. The written **h**, whether it be 'h muette' or 'h aspirée,' is in every case mute; *e.g.* **héros** [ero] and **héroïne** [eroin].

§ 31. For GERMAN [h] compare § 28. **It** occurs only at the beginning of words: **herab** [hɛ'rap], **hinein** [hi'naĭn]; elsewhere only before vowels with chief or secondary accent ('Hauptton' or 'Nebenton'): **Halt** [halt], **Anhalt** ['ʔanhalt] or ["ʔan'halt].

[h] precedes a vowel with secondary accent almost exclusively in compound words; particularly compounds with **-heit** [haĭt], preceded by a consonant, as **Weisheit** ['vaĭshaĭt] or by a vowel, as **Roheit** ['ro:haĭt]. Also in **Uhu** ['ʔu:hu:], **Schuhu** ['ʃu:hu:]; and in foreign words, as **Alkohol** ['ʔalkohɔl], **Sahara** ['za:hara:].

In all other cases written **h** is mute, whether it be etymologically justified, as in **sehen** [ze:ən], **sieh** [zi:]; or a sign of lengthening, as in **gehen** [ge:ən], **geh** [ge:].

Closure of glottis.

§ 32. If the current of breath is stopped by the glottis being firmly closed, and if it suddenly bursts through this obstacle, a voiceless stop is produced, generally called the *glottal stop*. It is sometimes falsely called 'spiritus lenis.' Phonetic symbol [ʔ].

When the production of [ʔ] is energetic, we have what is known as 'clearing the throat'; and 'coughing,' when it is spasmodic and involuntary. In these cases, there is usually some 'voice.'

§ 33. In ENGLISH and FRENCH the sound hardly occurs.

§ 34. In GERMAN the glottal stop [ʔ] regularly precedes the vowel at the beginning of a word, or of the second part of a compound, when the compound is still felt as such.

ein [ʔaĭn], **Verein** [fɐr'ʔaĭn] or [fər'ʔaĭn], but **herein** [hɛ'raĭn].

The presence of this sound is particularly noticeable in whispering.

There is no symbol for it in the current spelling; but as a general rule it occurs before initial vowels. There are very few exceptions: they comprise words compounded with particles, as **herein** [hɛ'raĭn], and foreign compounds, as **Adept** [ʔa'dɛpt].

Note.—It is necessary to insist again and again on the presence of the glottal stop, in the case of English pupils learning German. Germans complain that English people who know German well are often hard to understand, because they 'run their words together,' *i.e.* do not make use of the glottal stop.

Articulation of the Mouth
or oral (and nasal) passages.

Free opening of the oral (and nasal) passages.

Voiced sounds: **Vowels**—

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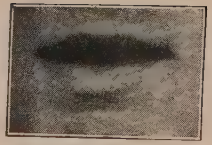
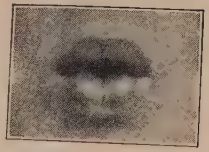
The diagrams on the following pages illustrate the section on vowels. That on page 27 represents the 'vowel triangle,' and shows to what extent the lips and the tongue are used in the production of the principal vowels; it is a modification of the diagram in Prof. Viëtor's 'Kleine Phonetik.' The photographs on the opposite page are new; they show the position of the lips in uttering normal [i, e, ɑ, o, u]; *in English the lips are not usually rounded or retracted quite so much. The diagrams on pp.* 28, 29 *are taken from an article by Dr R. J. Lloyd in 'Neuere Sprachen'; they have been inserted in order to show the gradual raising of the tongue along the* [a]-[i] *and* [ɑ]-[u] *lines*

VOWEL TRIANGLE:

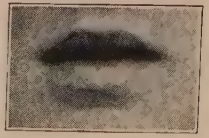
LIP POSITIONS.



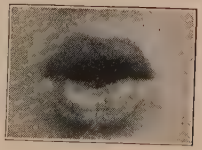
i



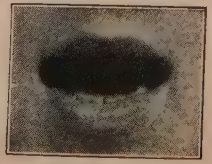
u



e

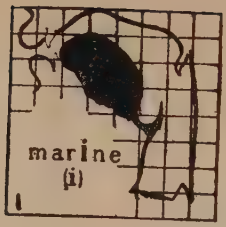


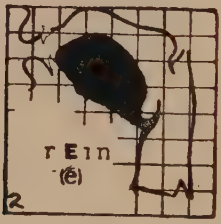
o

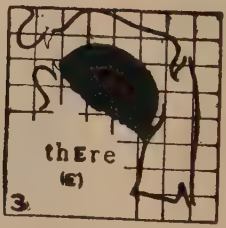


a

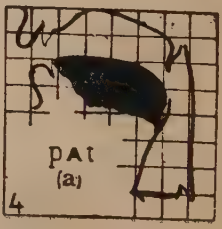
Opening of Lips
smallest
slit
round
greater
slit
round
great
small
round
smallest
Hard palate
Soft palate
Uvula
Teeth
front vowels
back vowels
i
u
e
o
a
tongue raised
most
least
angle of jaws
smallest
greatest

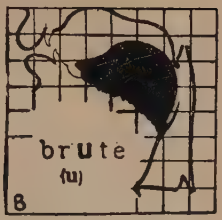


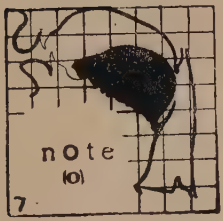


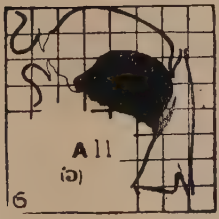


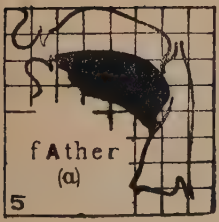
Note.—These diagrams represent the northern English pronunciation of Dr Lloyd. In southern English the vowel of **pat** is [æ], *i.e.* the front of the tongue is a little higher, and the tip a little farther from the lower teeth.




brute
(u)
8


note
(o)
7


All
(ɔ)
6


father
(ɑ)
5

ARTICULATION OF THE MOUTH.

Free opening of the passages.

Voiced sounds: Vowels.

§ 35. Various tones of 'voice' (resulting from varying vibrations of the vocal chords) are modified by the articulation of the mouth, which produces certain *resonances* within the cavity of the mouth.

The musical pitch of the various resonances can most easily be observed in whispering, for then there is no 'voice' blending with the resonance of the mouth.

§ 36. *The resonance of the mouth* varies according to (*a*) the position of the *tongue*, which may be defined relatively to two places of articulation:

the front or hard palate; this is the *front* or palatal articulation of tongue and palate;

the back or soft palate; this is the *back* or velar articulation of tongue and palate;

there is also the intermediate or medio-palatal articulation, when the middle of the tongue is slightly raised.

In normal or 'dorsal' vowels only the upper surface (*dorsum*) of the tongue is raised, and the lower surface remains always upon the floor of the mouth.

(*b*) The position of the *lips*; these may be:

drawn back at the corners;

protruded or rounded;

neutral (as in breathing through the mouth).

(*c*) The position of the soft palate.

In the case of back vowels there is generally also lip rounding; and the higher the tongue is raised the greater is the lip rounding (*i.e.* the opening

becomes very small). If, however, there is no lip rounding, this may to some extent be compensated for by the tongue being drawn further back. The raising of the tongue in the case of front vowels is similarly accompanied by a drawing back of the corners of the mouth.

The position of the lower jaw (angle of the jaws, distance between the rows of teeth) varies, as a rule, according to the raising of the tongue.

§ 37. We can raise (1) the front or (2) the back of the tongue, until the interval between it and (1) the front or (2) the back palate is very small indeed; so small that if they were brought any closer, the air would brush past and produce no longer a vowel but a continuant consonant. If we just avoid this we shall obtain (1) the front (or palatal) vowel 'close' [i] (diagram 1 on p. 28), and (2) the back (or guttural) vowel 'close' [u] (diagram 8 on p. 29). At the same time the part of the tongue not in action will be lowered, *i.e.* in [i] the back and in [u] the front; and the lips will be more or less drawn back for [i] and rounded for [u]. We have therefore in [i] a tubular channel with slit opening, and in [u] a hollow in the front part of the mouth with round opening; and so the pitch of [i] is high, and of [u] low.

§ 38. When the middle of the tongue is slightly raised we obtain the resonances for [ɑ] sounds. In the case of 'pure' [ɑ] (see diagram 5 on p. 29), the raising of the tongue is slightly nearer the soft palate than the hard palate.

§ 39. Between 'close' [i] and [ɑ] there are the resonances of:

'open' **i** [ɪ] sounds,
'close' and 'middle' **e** [e, *e*] sounds,
'open' **e** [ɛ, æ] and 'clear' **a** [a] sounds.

Between 'close' [u] and [ɑ] there are the resonances of:

'open' **u** [ʊ] sounds,
'close' and 'middle' **o** [o, *o*] sounds,
'open' **o** [ɔ] sounds.

§ 40. *Tense* (or *primary*) and *lax* vowels. In producing a vowel, we may adjust the articulations so favourably that the resulting sound is clear and decided (a 'primary' vowel). The vowel will be less satisfactory, if we adjust the articulations in a lax way; in producing the front unrounded vowels the neglect to arch the tongue towards the point of greatest constriction, and in producing the back vowels the neglect to round the inner cavity by sufficient withdrawal of the tongue-tip, are typical cases of lax articulation. In ENGLISH the accented long vowels are tense, but not as tense as in French, or even German; the accented short vowels are lax. In FRENCH, all accented vowels are tense. In GERMAN, the accented long vowels are more tense than in English, not as tense as in French; and the accented short vowels are lax.

For *tense* and *lax* the terms 'narrow' and 'wide' are often used.

§ 41. If the tongue position of front vowels [i, e] is combined with the lip rounding of back vowels [u, o], composite sounds result:

'close' [y], 'open' [ʏ],
'close' [ø], 'open' [œ].

Similar, but by no means identical, sounds can be produced by a rounding of the tongue; by raising the middle of the tongue rather more than for [ɑ]; or by combining front (*e.g.* [i]) articulation with back (*e.g.* [u]) articulation, the middle of the tongue being lowered.

PURE OR ORAL VOWELS
(Without Nasal Resonance).

Back vowels.

The u sounds:

close [u], open [ʊ].

§ 42. For [u] the place of articulation is farther back than in the case of any other vowel. The back of the tongue is raised quite close to the soft palate, and the front of the tongue is drawn down and back. In the front of the mouth there is consequently a fairly large place of resonance, the effect of which is usually increased by the protrusion of the lips and the formation of a round opening; the rows of teeth being fairly close.

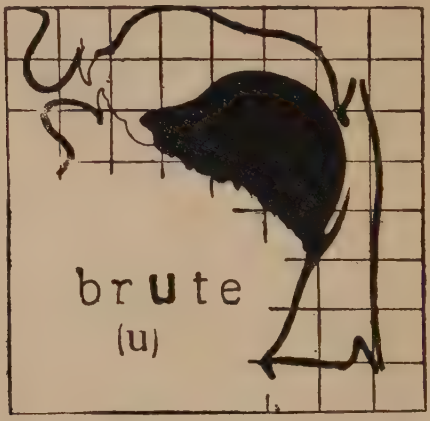
The resonance of [u] has the lowest pitch of all vowels.

The symbol [u] is generally used to designate both the close sound and the open sound (strictly [ʊ]).

§ 43. In ENGLISH [u] there is usually slight lip

rounding. There is no 'close' [u], generally speaking. The following are the usual [u] sounds:

The *long* [u] sound in **too** (No. 8 on p. 29 and here) begins with open or middle [u], but towards the end of the sound the articulation becomes more tense, and close [u] or consonantal [w] results; [tʊu] or [tuw].



As in the case of other long sounds, the long [u] is shortened before voiceless consonants, without, however, losing its diphthongal character: **root** [ruwt].

In syllables with little accent the first part of the diphthong is shortened and passes into a 'mixed' sound [ü][1]; but [u] may suffice to designate it: **July** [dʒuw'laĭ], more strictly [dʒüw'laĭ].

[1] [ü]=[u] advanced towards the middle position.

Before the 'neutral' vowel [ə] the diphthong loses its [w], and the [u:] is somewhat shortened: **cruel** [kru:əl]; the tongue is somewhat lower before r = [ə]: **poor** [pù:ə], almost [po:ə]. (Even [pɔ:] is often heard in London.)

The same sound occurs in the so-called 'long u,' preceded by [j], which after voiceless sounds often passes into the voiceless continuant [ç] or even [ʃ]; as in **new** [njuw], **tune** [tjuwn] or [tçuwn].

In syllables with slight accent the treatment of [juw] is like that of [uw]; in unaccented syllables we have [jü, jy, jə]: **value** [vælju] or [væljü], **regular** [regjulə], or with [—jü—] or with [—jə—].

The *short* [u] sound in **book** is open: [buk], more strictly [bùk].

Before a voiced final consonant the accented [u], as well as the consonant, is often pronounced half-long: **pull** [pul].

Unaccented it becomes [u, ü, ə], or is dropped: **useful** [juwsful, —fül, —fəl, —fl[1]]; **should** [ʃud, ʃəd, ʃd].

§ 44. In FRENCH there is only close [u], and the lips are much more rounded (the opening is smaller) than in English or even in German close [u], so that it is usually accompanied by a brushing of air past the lips, which sounds somewhat like subdued whistling. Note the inner rounding of the cavity by retraction of the tongue-tip.

[1] Vocalic or syllabic [l].

Long [u], *e.g.* in **rouge** [ru:ʒ]; *short* [u] in **route** [rut].

At the end of words the **u** sound, or at least the end of it, is often uttered without 'voice,' but with whisper.

§ 45. In GERMAN there are two **u** sounds which differ in quality and quantity.

Long [u] in **du** is close, *i.e.* the tongue is raised as far as it can be raised without letting the current of breath rub past and produce a continuant. The lips are usually rounded, often very slightly; **du** [du:].

In syllables before or after the chief accent the sound is often shortened: **Sudeten** [zu'de:tən], **Jaguar** ['jɑ:guɑ:r].

Short [u] in **und** is rather more open, *i.e.* the raising of the tongue is not quite so great and not quite so far back, the articulation is less decided, the lip rounding weaker; **und** [ʔunt], strictly [ʔʊnt].

This short [u] is also the first element of the rare diphthong **ui** [uĭ] in **pfui** [pfuĭ].

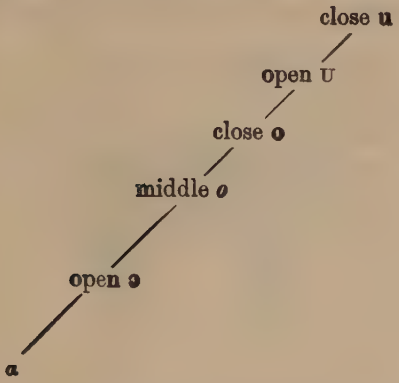
We may also describe the second element of the diphthong **au** [ɑŭ] as a weak open [u], although an [o] sound is sometimes substituted for it.

The o sounds:

close [o], open [ɔ].

§ 46. These are intermediate between the **u** sounds and the **a** sounds, and there is no clear dividing line

in either direction. It will suffice to distinguish a middle **o** [*o*], half way between **u** and **a** as far as articulation of tongue and lips is concerned, a close **o** [o]— as near again to **u** as it is to **a**,— and an open **o** [ɔ]— as near again to **a** as it is to **u**. Thus:

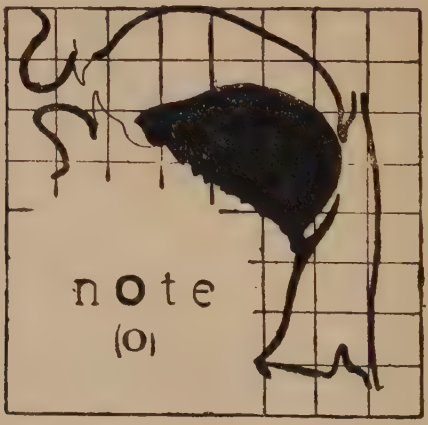


There are **o** sounds in which the raising of the tongue is more forward or backward than the regular line joining **u** and **a**.

Sounds which closely resemble a very open [ɔ] are formed by lowering the back of the tongue to the [ɑ] position, and even lower, and at the same time drawing it back. It is convenient to treat these sounds here. They are also designated [ɔ].

§ 47. In ENGLISH there are three qualities of **o** in accented syllables: the two kinds of 'long **o**' in **no** and in **lord**, and the short sound in **not**.

The so-called 'long o' in **no** is rather a diphthong, the first element of which is usually 'middle' **o** [*o*], though closer **o** also occurs. As a rule it is long [o:]; it is shortened before voiceless sounds and then becomes half long. The second element may be regarded as unstressed [ŭ]; but the tongue retains its [*o*] position, while the lips gradually reach the [u] rounding



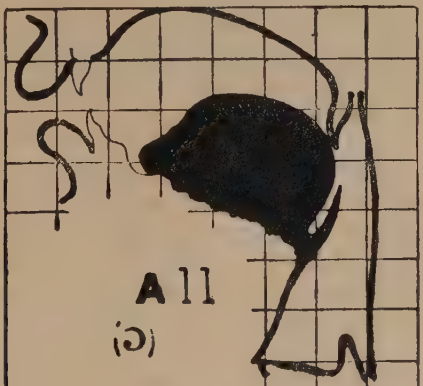
Thus: **no** [no(:)ŭ], **node** [no(:)ŭd], but **note** [noŭt] (No. 7 on page 29 and here).

In syllables with weak stress the first part of the diphthong is a 'mixed' sound [ö][1], and the second part is usually dropped: **fellow** [felöŭ, felö], **hotel** [höŭ'tɛl, hö'tɛl] (often with silent **h**). In affected speech this also occurs in stressed syllables; **oh** [öŭ].

[1] [ö]=[o] advanced towards the middle position.

When the stress is still weaker we have [ö] becoming [ə]: **obey** [ö′beĭ, ə′beĭ], **innocence** [inösəns, inəsəns].

The other 'long **o**,' in **lord** [lɔ:d], is a 'narrow' [ɔ]-sound: the back of the tongue articulating nearer to the velum (see § 12): the lip rounding is weak. It is identical with **a** in **all** (No. 6 on page 29 and here),



war, or with **au**, **aw** in **laud**, **law**. This is in standard speech the only sound of stressed **o** before **r**, if it is spoken as an **o** sound at all, and if it does not precede **rr** as in **sorry**, or **r** followed by a vowel as in **authority**. Before voiceless consonants the sound is reduced to half-long, as in **short**.

Strictly speaking this [ɔ:] is not a simple long vowel, but is followed by a faint [ə]-sound, which must not be regarded as representing

the **r**, as it occurs also where no **r** follows.—Only when **r** is final does it make its presence felt by strengthening the [ə], which then almost gives the impression of a full syllable; compare **law** with **lore**. When a vowel follows, as in **glory**, the **r** is pronounced as at the beginning of words.

When quite unstressed, this sound often passes into [ɔ], and then also into the same 'mixed' sound resembling [ö] as [oŭ] described above: **authority** [ɔ'θɔriti, ö'θɔriti[1]]; **or** stressed [ɔ:], unstressed [ö, ə].

The usual short **o** [ɔ] in **not** [nɔt] is 'lax,' as compared with long [ɔ:]; the **a** in **what** [wɔt, ʍɔt] is identical with it. Before voiced final consonants the [ɔ] becomes half-long, as in **dog** [dɔg]. Before **ss** [s], **st** [st], **th** [θ], **ff** [f], long [ɔ:] is frequently substituted for the short sound, *e.g.* in **cross, lost, cloth, off.**

When the stress is weak, this short [ɔ] also often passes into 'mixed' [ö]: **October** [ɔk-, ök'toŭbə]; when still weaker, we even have [ə]: **contain** [kön-, kən'teĭn], **author** [ɔ:θə]. Loss of vowel, *e.g.* in **lesson** [lesn̩].[2]

An open **o** sound (perhaps = [ɔ:], which is confirmed by Miss Soames and by Storm, while Sweet identifies it with [o] of [oŭ]), is also the first part of the diphthong **oi, oy** in **oil, boy**; the second

[1] The final [i] is open; it may also be written [eˑ].
[2] [n̩] indicates vocalic or syllabic [n].

part is [ɪ̯] (more strictly a sound half-way between [i] and [e] = [i.]). Phonetic symbol [ɔɪ̯]; hence [ɔɪ̯l, bɔɪ̯].

§ 48. In FRENCH the **o** sounds are partly close and partly open. Close **o** is long, *e.g.* in **rose** [ro:z], short in **côté** [kote]. Open **o** is long in **or** [ɔ:r], short in **robe** [rɔb].

The close sound (as we noted in French [u]) is more forward, and the lip rounding is more energetic, and the muscles are tenser than in the first part of English [oʊ̯] or in German [o]. The open sound is also tense, being distinguished from the close sound, not by the muscular action being relaxed, but by the tongue being lower.

Particularly the short [ɔ] shows a tendency to pass over into the 'mixed' [ö] sound, more especially before [n] and [m], and in the word **joli**.

§ 49. In GERMAN we have a similar distinction of quantity and quality, as in the case of the **u** sounds (see § 45); the long **o** is close [o], the short **o** varies between middle and open [ɔ]. Thus **so** [zo:], but **Sonne** [zɔnə].

Except when it is final, [o:] is shortened to [o] (not to [ɔ]) if it precedes or follows the chief accent. Thus **somit** [zo'mit], but **also** ['ʔalzo:].

Short [ɔ] is also the first part of the diphthong **eu, äu (oi)** in the speech of the stage; the second part is open [ɪ̯] or [ʏ̯], often a sound yet more open. We shall express it by [ɔɪ̯].

Intermediate or medio-palatal vowels.

The a sounds:

neutral [ɑ], clear [a].

§ 50. The **a** sounds occupy a position between the back and the front vowels.

We regard that **a** as '**pure**' or '**neutral**' in which the tongue position coincides with the intersection of the [u]-[ɑ] line and the [i]-[ɑ] line (see the diagram on p. 27), and the sound of which is equally untinged by [o] and by [e].

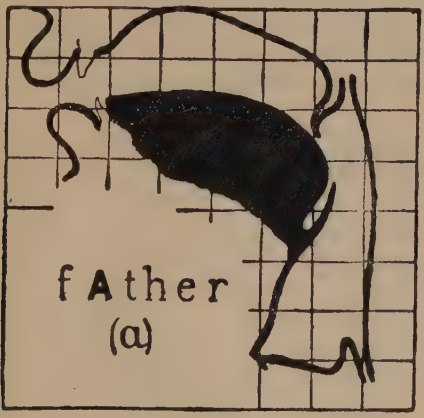
The articulation of [ɑ] consists of a very slight raising of the middle of the tongue ridge; as a rule the front of the mouth is opened farther than in the case of other vowels.

Owing to this '**middle**' articulation there is much scope for variety of **a** sounds. When the tongue is raised a little farther back we obtain lower, darker sounds resembling [ɔ]; when it is raised a little farther forward we obtain higher, clearer sounds resembling [æ] or [ɛ]. 'Clear' ɑ will be designated [a], where the distinction is important.

§ 51. In ENGLISH standard speech there is the long [ɑ:] in **father** [fɑ:ðə] (No. 5 on p. 29 and opposite); and also a short sound, which is very close to neutral [ɑ], and is here designated [ʌ], as in **nut** [nʌt], etc.

The long [ɑ:] is not always a simple sound; it may be a half-long [ɑ] together with a faint '**mixed**' sound, which is perhaps '**coronal**' (*i.e.* containing

[r], see § 70) and certainly differs very slightly from [ɑ:]. In the case of short [ʌ] the back of the tongue is raised a little more, and there may be a raising of the front of the tongue as well, as in mixed vowels (see § 69); thus it comes that—in addition to the sound like [ɑ]—there are varieties resembling [ə] or even [æ].



Unaccented [ʌ] passes into [ə]: but, accented [bʌt], unaccented [bət].

The first elements of the diphthongs in high and how may be regarded as a sounds tending to ' mixed and even palatal [æ] articulation. The former may be designated [aĭ] (the ĭ lying between ɪ and e); the latter [aŭ] (the ŭ lying between u and o).

§ 52. In FRENCH there is (1) 'neutral' [ɑ], long in **âme** [ɑ:m], short in **pas** [pɑ]; (2) palatal or clear [a], long in **rage** [ra:ʒ], short in **ma** [ma].

But as in the case of other French vowels, the difference in quantity between the long and the short sounds is not as marked as in English or German.

Both **a** sounds may combine with a preceding [w]; we have [wɑ:] in **croire**, [wɑ] in **crois**, [wa:] in **boire**, and [wa] in **bois** (verb). These diphthongs are usually written **oi**.

§ 53. In GERMAN both long and short *a*, [ɑ:] and [ɑ], as in **Vater** [fɑ:tər], **was** [vɑs] may on the whole be regarded as 'pure.' It is true that in the North particularly the short sound is often rather 'clear' (see above, § 50), while in the greater part of Middle and South Germany both long and short [ɑ] tend towards [ɔ]. On the stage the tendency is rather towards [a] than [ɔ]. There is the same distinction of the long vowel with 'tense' formation, and the short vowel with 'lax' formation, as in the case of the other German vowels.

In unaccented syllables [ɑ:] is often shortened to [ɑ]: **Datum** [dɑ:tum], **datieren** [dɑ'ti:rən].

The short [ɑ] is also the first part of the diphthongs **ei** or **ai** [ɑĭ] and **au** [ɑŭ].

Front vowels, without lip rounding.

The e sounds
(including æ sounds).

Close [e], open [ɛ].

§ 54. The **e** sounds occupy a similar position between [ɑ] and [i] as the **o** sounds between [ɑ] and [u]. However, the [ɑ]-[i] line representing the palatal articulations is longer than the [ɑ]-[u] line representing the guttural articulations, as is indicated by the diagram on page 27; [e] therefore is farther from [ɑ] than [o] is.[1]

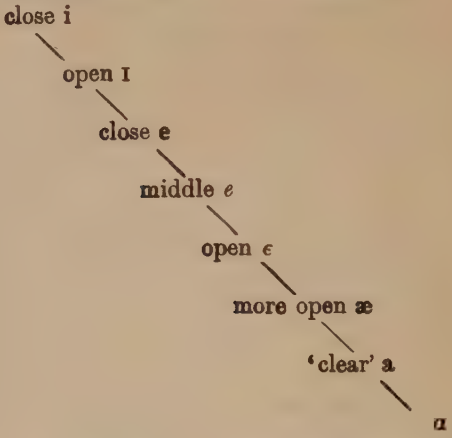
> This doubtless explains the richer development of the **e** sounds in English and German, as well as the existence of the symbols **æ**, **ä** beside **e**, as compared with the one symbol **o**.

The articulating part of the tongue is the front and middle of the ridge or dorsum. The opening of the lips and the angle of the jaws are smaller for **e** sounds than for [ɑ], and become yet smaller the more the sound departs from [ɑ] and approaches [i]. It is not by any means a rule that the corners of the mouth must be drawn back.

As in the **o** sounds, we distinguish a close [e] and an open [ɛ] beside middle [ɐ]; when the sound is very open, and indeed closely resembles 'clear' [a], it is designated [æ].

[1] "I think the greater variety of sounds is due to the far greater mobility, adaptability and muscular activity of the front of the tongue, and also to the fact that in these articulations a small variety of position produces a more noticeable change of sound than in the case of the back vowels."—H. W. Atkinson.

The [i]-[ɑ] line will then be as follows:



§ 55. In ENGLISH the e sounds run parallel to the o sounds, but we note more shades of quality in the former.

To the very open o sounds correspond:

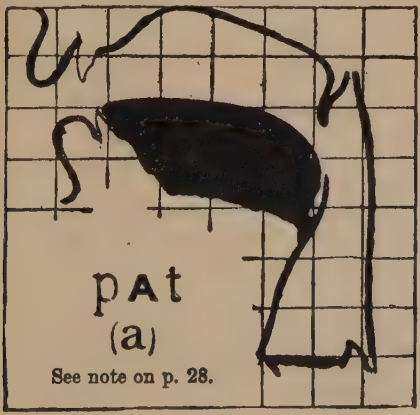
(i) the long, or commonly half-long, [ɛː] which lies between [ɑ] and [e] and has 'tense' formation; it is always followed by [ə], which is very faint before r: **there** [ðɛːə] (No. 3 on page 28 and opposite), **Mary** [mɛː(ə)ri].

There is also a less open pronunciation of the e sound in these words: [ðeːə, meː(ə)ri].

(ii) the short [æ], a sound more open than the one just described, and of 'lax' formation: **pat** [pæt] (No. 4 on page 28, and opposite, and see the note on p. 28).

On the other hand there is no o sound corresponding to

(iii) short [e], which (in standard speech) is only middle [*e*] or even close: let [l*e*t, let].

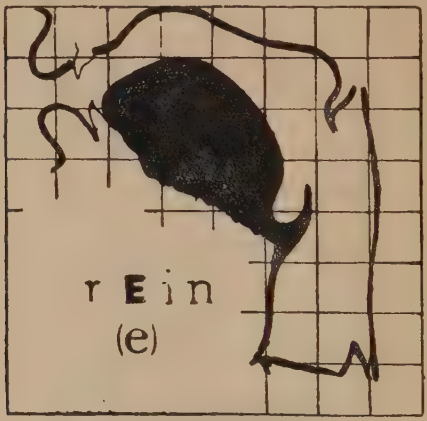


See note on p. 28.

In unaccented syllables [æ] and [e] pass into [ə]:

	strong	*weak*
that	[ðæt	ðət]
them	[ðem	ðəm]

Parallel to the diphthongal [o:ŭ] in **no** is [e:ĭ] in **pale** [pe:ĭl] (No. 2 on page 28, and here), the second element of which is half-way between [i] and [e].



Before voiceless sounds the [e:] (like the [o:] of [o:ŭ]) becomes half-long: **late** [leĭt].

§ 56. In FRENCH the open and close **e** sounds (all 'tense') are clearly distinguished. The long and short open **e** is usually a full [ɛ(:)]; **rêve** [rɛ:v], **paix** [pɛ].

In unaccented syllables the sound is shortened (it becomes half-long, indeed almost short): **pêcher** [pɛʃe].

The close **e** sound is only found short or half-long: **blé** [ble].

The combinations of **e** sounds with a preceding [j], as in **bière** [bjɛ:r], **pied** [pje] are instances of what are sometimes called 'ascending' diphthongs (cp. [*wa*, wa] on p. 44); see § 160.

§ 57. In GERMAN the open sound occurs long [ɛ:] and short (usually only half-open): **Bär** [bɛ:r], **fett** [fɛt]. The long (accented) sound is 'tense'; the short (accented) sound is 'lax.'

The close sound is long only: **fehlen** [fe:lən].

It is however more or less shortened when unaccented, as is [ɛ:] in foreign words: **Theater** [te(:)'ɑ:tər], **plaidieren** [plɛ(:)'di:rən].

The i sounds:

close [i], open [ɪ].

§ 58. The **i** sounds stand in the same relation to the **u** sounds as the **e** sounds do to the **o** sounds.

In general, the articulation consists in bringing the middle of the tongue ridge close to the middle of the hard palate. The drawing back of the corners of the mouth is not essential, though it may be done in order to add to the clearness of the sound. If the tongue is raised so high that the slightest further raising would produce a continuant (compare close [u], § 37), we obtain 'close' i [i]; if it be lowered—along the [i]-[ɑ] line—the sound becomes 'open' [ɪ] and approaches [e].

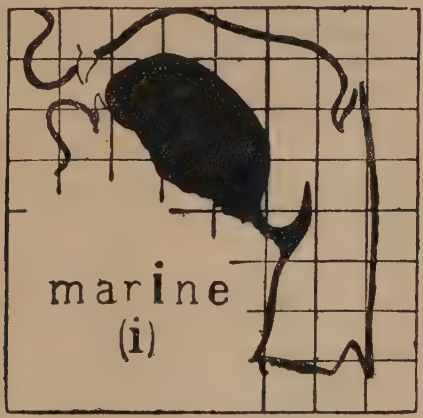
§ 59. In ENGLISH there is close parallelism between

u sounds (§ 43) and i sounds.

	[u:w]	. .	[i:j]
(before [ə]=r)	[u:]	. .	[i:]
	[ʊ]	. .	[ɪ]

The diphthongal [i:j] or [ɪ:i], as in **me** [mi:j] (see

diagram 1 on p. 28 and here), begins with half-open i; the tongue is then raised so that the second element is close [i] or consonantal [j]. The first element is shortened before voiceless sounds: **meet** [mijt]. The long [i:] (strictly half-long) is open; it occurs only before [ə] = **r**: **fear** [fi:ə].



The short **i** is also open: **fit** [fit], strictly [fɪt].

Unaccented short **i** is still more open; there are many shades of it, at the beginning of words and within them, which cannot be discussed here. When final, as in **very** [vere¹, veri], the tongue is lowered so much that the sound approaches close or even middle [e]. The symbol for these unaccented **i** sounds is [e˖], or roughly [i].

§ 60. In FRENCH the **i** sounds are close (compare French **u** sounds, § 44) and '**tense.**' The front of the tongue ridge articulates near the hard palate; the corners of the mouth are drawn back. The sound may be long, as in **rive** [ri:v], or short, as in **vif** [vif], **triste** [trist]. Sometimes the sound is 'half-long'; but in French the difference between this and '**short**' is very slight.

At the end of words the i sound, or at least the end of it, is often uttered without 'voice,' but with whisper.

§ 61. In GERMAN there is parallelism between

u sounds (§ 45)	**and i sounds**
[u:]	[i:]
[ʊ]	[ɪ]

The long (accented) sounds are '**tense,**' the short (accented) sounds are 'lax.' (See § 40.)

Examples: mir [mi:r], **mit** [mɪt].

In syllables before the chief accent the [i:] is usually shortened and often becomes [ɪ]: **Minute** [minu:tə], or even [mɪnu:tə], which should not be imitated. The **y** in words from the Greek is variously pronounced: as [i] (so regularly in a few thoroughly acclimatised words, *e.g.* **Gyps** [gips]), or as [y], which is preferred by most of the educated.

Front vowels, with lip rounding.

§ 62. These sounds are found in French and German. According to the usual view they result from a combination of

the lip rounding of **o** and **u** sounds with
the tongue articulation of **e** and **i** sounds.

The tongue articulation however appears to be somewhat modified: the front of the tongue is slightly lowered (inner rounding) and helps the lip rounding.

In English these sounds do not occur. However, the 'mixed' sounds, frequently used to represent **u** in **fur** or **but**, and the 'neutral' vowel in —**er** = [ə] both in articulation and in sound very closely approach those open [œ] sounds in which the lingual element prevails over the labial.

The ö sounds:

close [ø], open [œ].

§ 63. In general, these sounds combine the lip rounding of **o** sounds with the tongue position of **e** sounds. (The tongue position is modified, compare § 62.)

§ 64. In FRENCH there is close [ø] and open [œ], and both occur long and short or half-long; **creuse** [krø:z], **feu** [fø]; **peur** [pœ:r], **neuf** [nœf].

There is also a 'middle' sound between these, short and unstressed, here designated [ə]: **je** [ʒə].

§ 65. In GERMAN we notice the same distinction of the close long and open short sounds, as in the **o** sounds (§ 49). Long [ø] in **schön** [ʃø:n]; short [œ] in **wölben** [vœlbən] (this is rather a sound between close and open, compare short **o** and **e**).

The vowels of French words obtain the current German values in passing into that language (as in **Robe** [ro:bə], **Toilette** [to:a'lɛtə]); so here also, in the frequent ending **—eur**, French [—œ:r], the vowel being long becomes close: **Redakteur** [redɑk'tø:r].

The ü sounds:

[y] (voiceless [y]).

§ 66. Generally speaking, these sounds combine the lip rounding of **u** sounds with the tongue position of **i** sounds. (The tongue position is modified, compare § 62.)

§ 67. In FRENCH there is only close 'tense' [y]; the lip rounding is extreme. Long in **ruse** [ry:z]; half-long or short in **durer** [dy(:)re], **culte** [kylt].

At the end of the word, before a pause, the sound loses its 'voice' after a voiceless consonant; [sy̥] for [sy]=**su**. It does not lose it entirely after a voiced consonant; [dû]=[dyy̯]. Compare [u] in § 44.

§ 68. In GERMAN short ü is rather more open than long close ü: **kühn** [ky:n], **Sünde** [zyndə].

When it has not the chief stress, [y:] is shortened: **amüsieren** [ʔamy(:)ˈzi:rən].

The **y** of words taken from Greek is treated like German ü: **Lyrik** [ly:rik], **Rhythmus** [rytmus]; but it is also pronounced as **i** (compare § 61).

Mixed vowels:

[ə].

§ 69. In the case of these vowels the tongue is slightly raised in the middle; the front and back remain almost idle, though of course they are pulled up into an inward slant by the rising of the middle. There may be a slight hollow in the middle of the tongue, but it is easily abolished without altering the vowel.

The articulation of these sounds is not decided, and the impression on the ear is not clear.

In French [ə] occurs only in weakly stressed syllables (*e.g.* in je, me, te); it becomes [œ] if emphatic.

§ 70. In ENGLISH there is such a 'mixed' sound, *e.g.* in the ur of turn [tə:n]. The tongue is practically in the [ɑ] position. This sound is the current southern English pronunciation of certain vowels before a written r, which is pronounced only when before the vowel of a derivative ending or finally in 'liaison': err [ə:], but erring [ə:riŋ]; her [hə:], but her and me [hə:r ən mi:j].

In northern (and in some parts of southern) English the combination of vowel and r is pronounced as a 'coronal' ə: [ə:ʳ]; the point of the tongue is raised almost to the [r]-position, and the sound closely approaches [r] in value.

Another 'mixed' sound, which differs little from [ə:], is substituted for short (usually back) vowels when not accented: **ivory** [aĭvəri], **stirrup** [stirəp]. The sound approaches [ə:] yet more closely in those cases in which the unaccented vowel was (and in writing still is) followed by final **r**: **better** [betə].

Here also there is often transition to the 'coronal' [ə^{r}].

Another [ə] sound is frequently heard in place of the southern English [ʌ] sound in **but**, etc. Further, there are the first elements of [aĭ] in **high** and [aŭ] in **now** (compare § 51); and the sounds occasionally substituted for unaccented [oŭ], as in **fellow** (compare § 47), and for [ju] as in **value** (compare § 43).

§ 71. In GERMAN there is only the 'unaccented **e**' in syllables before or after the stem: **Gebot** [gəbo:t], **Bitte** [bitə]; also in enclitics when unaccented: **es** [əs].

The whole tongue seems to be raised a little more than for [ɑ]; the raising of front and back and lowering of middle being very slight. Following consonants often affect the sound, and it tends to [e], [ɑ], [o], or [œ]. It may be said that in final **e**, the [e] element generally preponderates.

Vowels with nasal resonance, nasal vowels.

§ 72. In ENGLISH there are no nasal vowels. Words borrowed from French, if they really become part of the language, are generally pronounced in English fashion, and [ɔn] is used for [ɑ̃] and [õ], [æn] for [ɛ̃], [œn] (and perhaps [ʌn]) for [œ̃] ; occasionally [o:ŭn] for [õ]. Thus **envelope** [ɔnvəloŭp], **rendezvous** [rændivuw].

§ 73. In FRENCH there are four nasal vowels, all open and with the tongue lowered. The nasal character of these sounds is so evident because the velum is lowered considerably.

Nasal [õ], written **on** or **om**, is a little closer than oral [ɔ] in **porte**, **morte** ;

nasal [ɛ̃], written **in**, **ein**, or **ain**, is more open than oral [ɛ] in **perte**, **mer** ;

nasal [œ̃], written **un** or **um**, is more open than oral [œ] in **peuple**, **peur** ;

nasal [ɑ̃], written **en**, **em**, **an**, or **am**, is a little closer than oral [ɑ] in **lâche**.

These sounds are short when final (though they may be long before an emphatic pause) ; before consonants they are long when they bear the chief stress, half-long with secondary stress : *e.g.* short [õ] in **rond**, long in **ronde**, half-long in **rondeau**.

§ 74. In GERMAN nasal vowels occur only in words recently borrowed from French. They seem, however, to be always long (for they are in 'open' syllables, in which German has no short accented vowels): **Ballon** [bɑ'lõ:], **Nüance** [ny'ɑ̃:sə], **Bassin** [bɑ'sɛ̃:], **Verdun** [vɛr'dœ̃:].—In northern, and partly in middle German, the native sounds [ɔŋ, ɑŋ, ɛŋ, œŋ] are often substituted: [bɑ'lɔŋ, ny'ɑŋsə, bɑ'sɛŋ, vɛr'dœŋ].

Voiceless sounds: h sounds.

§ 75. If the current of breath—without first producing 'voice'—passes through the mouth, which has already prepared itself for the uttering of a certain vowel, the slight 'friction' produced will appear to the ear as a breath [h]. There are as many varieties of it as there are of vowels: for instance [hɑ:] is really voiceless (breathed) [ɑ] followed by voiced (vocalic) [ɑ], [he:] is voiceless and voiced [e], and so on. Compare § 26.

DIAGRAMS

representing the articulation of the tongue against the hard palate.

What is black in the following diagrams indicates those parts of the hard palate which are touched by the tongue when the vowels [i, y, e, ø, ɛ] are uttered. They are the results of actual experiments made with artificial palates, covered with fine powder,[1] and

[1] So Viëtor; others covered the artificial palate with paint. The artificial palate is now made of black vulcanite, and kaolin is used.

then inserted in the mouth; the powder being removed wherever the tongue touches. The results were obtained by Kingsley for English, by Rousselot for French, and by Viëtor for German.

[i]

[y]

[e]

French. German.

[ø]

French German.

[e]

The following diagrams show the vowel schemes of English, French and German. For the [u]-[ɑ]-[i] lines, see the diagram on p. 27. The asterisk indicates that the sound occurs both long and short. The brackets imply lip rounding.

(The antevocalic **h** sounds of English and German correspond in articulation with the respective vowels.)

English Vowels.

Examples:

	pit			**put**
Short vowels	**pet**	**ivory**		**but**
	pat			**pot**

Long vowels	father, fall, firm
slightly diphthongal	*with* [ĭ] bait *with* [j] beat *with* [ŭ] boat *with* [w] boot *with* [ə] bear, beer, boar, boor
Clearly diphthongal	*with* [ĭ] file, foil; value *with* [ŭ] foul
Triphthongal	*with* [ə] fire, employer; pure flour

French Vowels.

*i (*y) (*u)
e (*ø) (*o)
*ɛ *ɛ̃ (*œ *œ̃) (*ɔ *ɔ̃)
ə
*a *ɑ̃

Examples:

Short vowels

vif culte route
blé feu côté
paix neuf robe
ma
pas

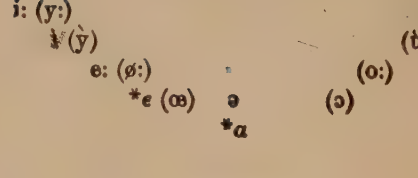
Long vowels

rive ruse rouge
creuse rose
rêve peur or
rage
âme

Nasal vowels

banc, bain, bon, un

German Vowels.



Examples:

	mit Sünde	und
Short vowels	bitte	Sonne
	fett wölben	
	was	
	mir kühn	du
Long vowels	fehlen schön	so
	Bär	
	Vater	
Diphthongs	drei, Frau, treu	

Articulation of the Mouth (continued).

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Narrowing of the passages: **continuants.**

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Consonants ; voiced and voiceless (Nasals see § 132).

§ 76. When the articulation of the mouth is such that in some part of the passage through the mouth there is a narrowing or closure, then the current of exhaled breath produces a certain sound; the resonance due to the articulation has some effect also, but it is of secondary importance.

Certain of these sounds are used for the purposes of speech ; they are the *consonants* (which also include the glottal sounds and the breath sounds, §§ 23 foll.).

§ 77. When the sound is due to a rubbing of the air as it passes (continues) through the narrowing, it is a *continuant*[1] or fricative ; if it is due to the checking of the air by means of a closure or stoppage or to the explosion caused by breaking through the stoppage, it is a *stop* or plosive (sometimes called explosive).

§ 78. When the breath has produced 'voice' (by setting the vocal chords vibrating) before it reaches the narrowing or the closure, the sound is *voiced*; otherwise it is *voiceless*.

Generally speaking we have pairs of sounds: a strongly articulated voiceless sound beside a weakly articulated voiced sound. They will be treated together in the following sections.

> A sound may be 'soft,' *i.e.* weakly articulated, without on that account becoming 'voiced.' This is the case in middle and southern Germany, where the 'soft' consonants are actually voiceless.

[1] This term is not strictly correct in the case of all sounds to which it is applied. English [ɹ], [w] and [j] gradually open or shut (they are 'gliding,' not 'held'), and are not continuants ; but they are fricatives.

The manner of formation may be tense or lax in the consonants, as well as in the vowels (§ 40). In ENGLISH they are lax, in FRENCH tense, while in GERMAN the formation is between the two extremes.

Voiced continuants, when adjacent either to a voiceless sound or to silence, always possess a voiceless portion, which is characteristically long in ENGLISH, and short in FRENCH.

NARROWING OF THE ORAL PASSAGES. CONTINUANTS.

Uvular [ʀ];

Back or velar continuants:
voiced [g], voiceless [x];

Front or palatal continuants:
voiced [j], voiceless [ç].

§ 79. The narrowing here takes place

between back of tongue ridge and soft palate in the *velars* (more strictly: postpalatals);

between front of tongue ridge and hard palate in the *palatals* (more strictly: antepalatals).

As in the sounds already discussed, where the passage is open, it is the *ridge* or *dorsum* of the tongue which articulates, the formation of the sounds is *dorsal*.

For [g, x] the tongue is raised as for close [u], and
for [j, ç] „ „ „ close [i];
but in each case a little higher, so that the breath brushes past.

For uvular r, designated [ʀ], the narrowing is even farther back than for [x].

Uvular r [ʀ].

§ 80. This is the sound produced when the uvula is made to vibrate, the back of the tongue ridge being raised towards the soft palate. If there is no channel along the tongue to enable the uvula to vibrate freely, the sound becomes scraping or passes completely into [g] or [x], as friction of air takes place between the velum and the tongue ridge.—As a rule the sound is voiced, but before or after voiceless sounds, and when final, it may become voiceless.

§ 81. In ENGLISH it only occurs as a peculiarity in individuals or in dialect (it is the 'Northumbrian burr').

Englishmen are warned against trying to acquire the uvular [ʀ]. "An Englishman easily learns to trill lingual [r] to the satisfaction of any Frenchman, whether [ʀ] or [r] speaker; but I never heard an Englishman produce a decent [ʀ]."—P. Passy.

§ 82. In FRENCH it is the regular sound of **r**. In Paris and other big towns it is almost exclusively used, though theoretically the lingual **r** (see § 102) is preferred; in the country as a whole lingual **r** is more prevalent.

§ 83. In GERMAN uvular **r** ('Zäpfchen-r') is much used, particularly in towns, and seems to be spreading. In the speech of the stage and in singing only lingual **r** is considered correct.

Back or velar continuants.

voiced [g], voiceless [x].

§ 84. By raising the back of the tongue ridge yet higher than for [u] we obtain a narrowing; the breath brushing through it produces velar or back

continuants. The sound varies slightly according as the narrowing is further forward or more behind.

§ 85. In ENGLISH the sound [x] is not a recognised 'letter,' but even in southern speech it sometimes expresses the **gh** of the interjection **faugh** (usually [fɔ:]); it is becoming more and more common in the pronunciation of words taken from Scotch (*e.g.* **loch**), Welsh or German. The sound is fairly common in the popular dialect speech of Scotland and northern England.

§ 86. In (northern and middle) GERMAN the voiced [g] is used for written **g** (not final) after back vowels (*a*, o, u): **Tage** [tɑ:gə]. The voiceless [x], the so-called **ach**-Laut, represents the **ch** following *a*, o, u: **ach** [ʔax]; and (in northern and middle German) also the final **g** after *a*, o, u: **Tag** [tɑ:x].

> In the speech of the stage and in southern Germany **g** after *a*, o, u is pronounced as a stop [*g*], finally [k]: [tɑ:*g*ə, tɑ:k]. Foreigners need therefore not trouble to acquire the other pronunciation; see also § 123. The pronunciation [*g*, k] seems to be gaining ground.

Front or palatal continuants:

voiced [j], voiceless [ç].

§ 87. [j] and [ç] are in the same relation to [i] as [g] and [x] to [u].

§ 88. In ENGLISH the voiced sound is produced with so little narrowing that as a rule the brushing of air is hardly perceptible; and it is essentially gliding, not held. It occurs most frequently at the beginning of words, when it is written **y**, as in **yes**; and in the combination [ju:w], written **u**, **eu**, etc., as in **due** (compare § 43). After voiceless sounds it occasionally passes into [ç], or even [ʃ]; compare the vulgar **don'tcherknow.**

French. German.

[ç]

See p. 60.

§ 89. In FRENCH we find [j] similarly used: for **y** in **yeux** [jø], for **i** in **vieux** [vjø]; and the voiceless sound often after voiceless consonants, as in **pied** [pje, pçe].

As in these cases vocalic **i** sounds pass over into continuants, so French **i** in general—owing to its very close articulation—is but little removed from a continuant; and indeed for final [i] we often have [ç], which also takes its place in whispering.

§ 90. In GERMAN [j] is the **j** at the beginning of words: **ja** [ja:]; but—unlike English—it is held. In northern and middle German it is used for **g** within words after front vowels or **l, r**: **Siege** [zi:jə]. Voiceless [ç], the '**ich**-Laut,' for **ch**: **ich** in [ʔiç], and in northern and middle German for final **g** after front vowels: **Sieg** [zi:ç].

Here also (see § 86) the speech of the stage and of southern Germany adopts the pronunciation of **g** as a stop: [zi:*gə*, zi:k].

Teeth or dental continuants:

voiced [ʒ, z, ð],
voiceless [ʃ, s, θ];
liquids [r] [l].

§ 91. The dentals include sounds articulated by the point of the tongue (including what is strictly called the 'blade,' viz., that part of the surface which lies behind the point), and

the ridge above the upper teeth (*alveolar* continuants); or

the teeth themselves (true *dental* continuants).

The part of the tongue which helps to form the narrowing is

the front rim of the tongue } *apical* formation, or

the surface of the tongue behind the front rim } (*pre*)*dorsal* formation, or

both combined *dorso-apical* formation.

As in the case of back and front consonants, the place of articulation for most dentals is along the middle line of the mouth (*medial* formation); but for the l sounds the narrowing is between the side rim or rims of the tongue and the side teeth (*lateral* formation).

The 'hushing' and 'hissing' sounds, or sibilants.

§ 92. These include the sounds represented in English by **s**, **z**, **sh**, etc. The characteristic 'hissing' seems to be due to a breaking of the current of breath against the teeth; the current being diffused in the **sh** sounds and concentrated on one point in the **s** sounds.

According to Dr Lloyd, the chief force in the production of English [ʃ] is the resonance of the fore cavity reinforcing that which comes from the hind cavity.

The hushing sounds:

voiced [ʒ], voiceless [ʃ].

§ 93. In ENGLISH the simple voiced [ʒ] only occurs, where in the spelling **s** is followed by a front vowel (or by **u** = original [ju:]). Here it has been substituted for older [zj]: **vision** [viʒən], **pleasure** [pleʒə]. The spelling is **z** in **azure** [e:ĭʒə]. The combination [dʒ] is much more common. This is the usual pronunciation of **j**: **joy** [dʒɔĭ], **June** [dʒu:wn], etc., and often of **g** before a written front vowel: **age** [e:ĭdʒ], etc.

The voiceless [ʃ] is usually written **sh**: **sheep** [ʃijp], **rash** [ræʃ], etc.; also **s** (after consonants), **ss**, **c**, **t**, before front vowel (and before **u** = original [ju:]), when following the chief accent; as in **tension**, **passion**, **vicious**, **nation**.[1] The combination [tʃ] is very common; it is usually written **ch**: **church** [tʃə:tʃ]; also **tch**: **scratch** [skrætʃ]; in some words [tʃ] has sprung from [tj] = **t** before front vowel (or before **u** = original [ju:]), when following the chief accent, as in **righteous** [raĭtʃəs], **nature**

English. French. German.

[ʃ] See p. 60.

[neĭtʃə], etc. Similarly, the combination [kʃ] goes back to [ksj] = **xi** in **anxious** [æŋkʃəs], etc.

The tongue articulation of these **sh** sounds is (pre)dorsal[2] and also apical (or dorsal only) and *palatal*. There is some friction between the tongue and the gums; but that past the front teeth is more important. The lips are passive.

[1] Here [ʃ] arose from [sj].

[2] (Pre)dorsal = dorsal or predorsal.

§ 94. In FRENCH the voiced [ʒ] occurs frequently. It is written **j**, and **g** before **e**, **i** (**y**), **ge** before **a**, **o**, **u**: **jardin** [ʒardɛ̃], **loger** [lɔʒe], **pigeon** [piʒɔ̃]. — The voiceless sound is written **ch**: **chapeau** [ʃapo].

The tongue articulation is (pre)dorsal and *(post)alveolar*, or apical and *(post)dental*. The friction takes place as in English. The lips are practically passive.

§ 95. In GERMAN the voiced [ʒ] occurs only in borrowed words, mostly from the French, and retains the foreign spelling **j**, **g**: **Journal** [ʒur'nɑ:l], **Logis** [lo'ʒi:]. For the foreign combination [dʒ] German usually substitutes [ʒ]: **Jockey** [ʒɔkɑĭ]. — The voiceless [ʃ] is common; in native words it is usually written **sch**: **Schall** [ʃɑl], **Esche** [ˀɛʃə], **Busch** [buʃ]. This is also the sound of **s** in German words beginning with **sp**, **st** (except in a part of northern Germany): **Spitze** [ʃpitsə], **sprechen** [ʃprɛçən], **Stein** [ʃtaĭn], **straucheln** [ʃtraŭxəln]. The combination [tʃ] occurs for the **tsch** of German words, as in **Peitsche** [pɑĭtʃə]; also for foreign **ch**, though here plain [ʃ] is more frequently spoken: **Check** [tʃɛk, ʃɛk].

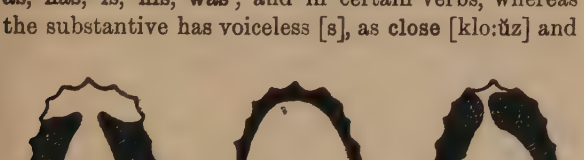
The tongue articulation is dorsal and *alveolar* or *postdental*. The friction takes place as in English. The lips are protruded.

§ 95A. The fundamental conditions of the **sh** sounds are: (1) post-alveolar friction (for which any available part of the fore surface of the tongue may be employed); and (2) a cavity behind both rows of teeth.

The hissing sounds:

voiced [z], voiceless [s].

§ 96. In ENGLISH both are usually written **s**. The voiced sound is also written **z**, as in **zeal** [zi:jl]. It is **s** particularly when it represents an inflection, and follows a voiced sound: **wails** [we:ĭlz], **dances** [dɑ:nsiz]; in some monosyllables it occurs finally: **as, has, is, his, was**; and in certain verbs, whereas the substantive has voiceless [s], as **close** [klo:ŭz] and



English. French. German.
[s]
See p. 60.

[kloŭs], **use** [ju:wz] and [juws]. In many positions, *e.g.* after **dis-, pre-, re-** the pronunciation of **s** is [z] in one batch of words, [s] in the rest; as in **disease** and **disobey, reserve** and **research**. The combination [*gz*] is written **gs**, and also **x** before **an** accented vowel: **anxiety** [*æŋ́gzaĭəti*], etc.

The voiceless [s] is written **s** initially: **set** [set]; it is an inflection after voiceless sounds: **lots** [lɔts], **bakes** [beĭks]; it also occurs after voiceless sounds, as in **gipsy**, and within the word, in most cases, even

after voiced consonants, as in **intensity**; and also after vowels (especially in words from the Latin), as in **decisive**. It is also written **ss**: **passage**, etc.; and **c** or **sc** before **e** or **i**: **cite**, **scene**, etc. The letter **x** in most cases has the value [ks]: **box**, etc.

The tongue articulation is (pre)dorso-apical (cp. § 91, towards the end), and *alveolar*.

§ 97. In FRENCH both sounds occur. The voiced [z] is written **z**: **zèle** [zɛ:l], or **s** (as a rule between vowels): **maison** [mɛ:zõ], **rose** [ro:z]. Otherwise silent **s**, **x**, **z** also have the value of [z] in 'liaison'; with this exception, **x** rarely = [z].—In all other cases **s** is [s], particularly initially: **sel** [sɛl], **estimer** [ɛstime], **Vénus** [venys]; **ss** always expresses this same sound, as do also **c** or **sc** before **e**, **i** (**y**), **ç** before other vowels, and **t** before **i** in certain suffixes. — The combinations [*gz*] and [ks] are also written **x**, which usually has the latter value.

The tongue articulation is (pre)dorsal, and *postdental* or *alveolar*.

§ 98. In GERMAN **s** has the value of voiced [z] initially, and within the word between vowel or liquid and vowel: **so** [zo:], **reisen** [rαĭzən], **Binse** [binzə], etc.—In all other cases **s** = voiceless [s] (except in initial **sp**, **st**; cp. § 95): **Skelett** [skɛ'lɛt], **Erbse** [ʔɛrpsə], **List** [list], **Moos** [mo:s]; and **ss** has the same value: **reissen** [rαĭsən], **Fuss** [fu:s], **Kuss** [kus]

The tongue articulation is (dorso)apical or dorsal, and *alveolar*.

§ 98A. The fundamental conditions of the **s** sounds are the same as for the **sh** sounds (§ 95A), but on a smaller scale. The constriction must be more advanced, (pre)alveolar, and the intra-dental cavity is therefore much smaller; but the tongue may (and does) wander, exactly as in [ʃ, ʒ], though within narrower limits.

The lisping sounds:

voiced [ð], voiceless [θ].

§ 99. If an **s** sound is articulated, but without a well-formed channel along the middle of the tongue and without a well-formed intradental cavity, the result is a 'lisping' sound. These are not found in French or German, except as a defect of speech.

They are sometimes called interdental sounds; but it is by no means an essential of these sounds in general, or the English sounds in particular, that they should be produced 'interdentally,' *i.e.* with the tongue point between the teeth. Indeed as a rule the English sounds are not so formed, the narrowing being between the tongue point (with apical articulation) and the back of the front upper teeth.

§ 100. The voiced sounds occur *e.g.* in **thou** [ðaŭ], **this** [ðis], **brother** [brʌðə]; the voiceless in **thin** [θin], **breath** [breθ]. After a long vowel the final [θ] of some substantives becomes voiced before the **s** of the plural: **bath** [bɑ:θ], **baths** [bɑ:ðz].

The liquids:

[r] and [l].

§ 101. These sounds differ in various points from the other 'continuants,' but may be given under this

heading. According to the English, French and German system of sounds, we do not regard voiced **r** and voiceless **r** [r̥], voiced **l** and voiceless **l** [l̥], as independent sounds, but recognise only one **r** and one **l**, which are both voiced as a rule, but may be voiceless under certain circumstances.

When there is 'voice,' the narrowing may be very slight, for even then it suffices to give the sound its characteristic resonance; the **r** and **l** thus formed have—like the nasals—very much the nature and effect of vowels. The narrowing only becomes considerable and the 'friction' obvious when the sounds are produced without 'voice.'

The r sounds:

voiced [r], voiceless [r̥].

§ 102. The tongue point [r] (lingual or dental **r**) is produced by a narrowing between the raised tongue point and—as a rule—the ridge of the upper gums (the alveoles). The French and German **r** is also rolled (trilled), *i.e.* the stream of air causes the tongue point to vibrate. This is not the case in English **r**. (The untrilled **r** is strictly [ɹ]; but [r] is usually employed for it.)

Meyer has, however, found a *single* repetition in a purely southern [r], regularly, when medial.

§ 103. In ENGLISH alveolar (or: lingual) **r**, untrilled, consisting of a single tap of the tongue, or of a slight narrowing, without strong 'friction,' only occurs before vowels initially and within the word

(for **r, rr,** and for **rh, rrh** in words from the Greek): **right** [raĭt], **very** [veri], **parrot** [pærət]; also after consonants: **grow** [gro:ŭ]. But particularly after [d] or [t] there is greater narrowing and consequently 'friction', and after voiceless sounds there is besides loss of 'voice': **dry** [draĭ], **try** [traĭ] or [t̬raĭ]. Cp. also *e.g.* **grease** [grijs] and **increase** [in'krijs] or [in'k̬rijs]. These sounds approach the value of [ʒ, ʃ].

Final **r**, as well as **r** within the word before consonants, have lost their **r** value in educated

English French. German.

[r] See p. 60.

southern speech, their place being mostly taken by [ə], compare § 70; but for this **r**, as also for **ur, er, ir** the dialects have [r] sounds. In 'liaison' before an initial vowel the [r] generally appears: **better** [betə], but **better and better** [betər ən betə]; **here** [hi:ə], but **here and there** [hi:ər ən ðɛ:ə]. Even here it is often omitted by the younger generation in southern England.

Before [r] within the word between vowels and finally in 'liaison' there is in most cases

[ə]; sometimes not (viz., when the preceding vowel is short, or after diphthongs, or after [ɛ:] or [ɑ:] or, generally, [ɔ:]).

§ 104. In FRENCH the lingual [r], if used at all, is trilled. Like the uvular [ʀ], which generally takes its place, it is as a rule voiced: **rire** [ri:r], **porter** [pɔrte]; final **re** after consonants is often voiceless (and dropped altogether in colloquial speech): **offre** [ɔfr̥], **sucre** [sykr̥]. The written **rr** (**rh**, **rrh**) has the same value as **r**; but in a number of words **rr** = [rr] or [r:], the rolling decreasing and then increasing again; as in **mourrai**.

§ 105. In GERMAN the lingual [r] is as a rule clearly trilled, except when it is final. It is generally voiced and produced without any distinct 'friction.' Before or after voiceless sounds, it often loses its 'voice,' partly or altogether. Finally the rolling is sometimes reduced to a single tap of the tongue (as in English initial [r]); or [ə], [ɑ], and [æ] sounds are substituted (but this should not be imitated). The written **r** and (after short vowels) **rr**, as also **rh** and **rrh**, have the value of [r] in all cases.

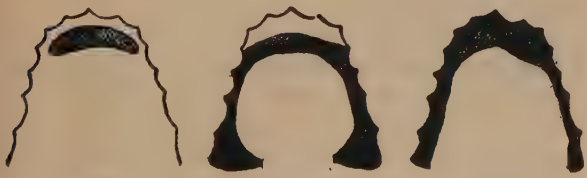
The l sounds:

voiced [l], voiceless [l̥].

§ 106. Here we have a narrowing between the side rims (or one only) of the tongue and the molars and side gums (*lateral* articulation); the tongue point

touching the top of the mouth somewhere along the middle line; in English, French and German it is the middle of the ridge over the upper teeth.

§ 107. In ENGLISH there is a concave lowering of the front of the tongue, and in connection with it a raising of the back of the tongue. This gives the [l] a low sound, particularly noticeable when it is final. Before and after voiceless sounds it may lose its 'voice,' as in **play, felt,** etc., and the friction becomes more obvious.



English. French. German.

[l]

See p. 60.

§ 108. In FRENCH, [l] (like French [r]) is generally voiced, but voiceless when final after a consonant: **lire** [li:r], **aller** [ale]; **table** [tab̥l], etc.—In the combinations **ll, ill, ille, il, ille** after a vowel the [j] sound ('l mouillée') is often used [1]; rarely for **l** alone.

§ 109. In GERMAN [l] is usually voiced and has no obvious 'friction.' Usually the back of the tongue is lowered.

[1] In provincial French [lj] often represents the 'l mouillée.'

Lip or labial continuants.

lip-teeth or labiodental:
voiced [v], voiceless [f];
lip-lip or bilabial:

voiced	[w],	voiceless	[ʍ].
	[ʋ],		[ɸ].
	[ɥ],		[ɥ̊].

§ 110. The *labiodental* sounds are produced by the breath passing between the lower lip pressed against the upper teeth, the *bilabial* sounds by its passing between the lips.

The labiodentals and the bilabials have both a tongue articulation which is always very open, and resembles that of the following vowel: the [w] sounds have a tongue articulation like [u] or somewhat more compressed; the [ɥ] sounds have a tongue articulation like [y] or somewhat more compressed. Still, purely consonantal bilabial [ʋ] and [ɸ] are not rare.

§ 111. In ENGLISH the voiced labiodental [v] is usually written **v**: **very** [veri], **liver** [livə], **serve** [sə:v]. The voiceless labiodental [f] is usually written **f** or **ff**, but also **ph**: **find** [faĭnd], **differ** [difə], **philosophy** [fi'lɔsəfi].

There is also a voiced bilabial [w], with the tongue in the [u] position, but with rapidly vanishing and therefore indistinct friction, usually written **w**: **wet** [wet]. The corresponding voiceless sound [ʍ] is written **wh**, as in **which**; in natural southern English, however, the voiced sound is used here also, though

attempts are often made to reintroduce the voiceless sound, which is generally used in northern English and in Scotch.—After voiceless sounds [ʍ] sometimes takes the place of [w]: **twenty** [twenti] or [tʍenti].

Both these sounds [w, ʍ] are essentially gliding, not held.

§ 112. In FRENCH there are also labiodental voiced [v] and voiceless [f]: **vin** [vɛ̃], **vive** [vi:v]; **fin** [fɛ̃], **vif** [vif].

French has further two kinds of bilabials: a [w] with lips well rounded and the tongue raised to the [u] position, as in **roi** [rwɑ]; and a [ɥ], also with lips well rounded and the tongue raised to the [y] position, as in **ruine** [ɥin]. After voiceless sounds both tend to become voiceless [ʍ] and [ɥ̥], as in **point** [pwɛ̃] or [pʍɛ̃], **puis** [pɥi] or [pɥ̥i].

§ 113. In GERMAN the voiced labiodental [v] is represented by **w** in writing, also by **v** in words borrowed from Latin or the Romance languages; like all other voiced consonants in German it does not occur finally; examples: **was** [vɑs], **Klavier** [klɑ'vi:r]. The friction is much less distinct than in English and French.

In middle and southern Germany **w** is generally pronounced as a bilabial [ʋ], produced without lip rounding and without much friction, also without raising of the tongue; it is not voiced except sometimes when it passes over

into the next sound, so that it is perhaps better designated as a weak [ꜰ].

In these parts of Germany foreign **v** is pronounced [f], not only when it is final, as in **kursiv** [kurzi:f], but also initially, as in **Vikar** [fikɑ:r], and medially, as in **Klavier** [klɑfi:r].

For **w** in the combinations **schw**, **zw**, (**sw**, **tw**), and for **u** in **qu**, bilabial [ʋ] is often spoken instead of labiodental [v], and in these cases both often lose some or all 'voice': **Qual** [kvɑ:l], **Schwester** [ʃvestər] almost [kfɑ:l, ʃfestər], or [kʋɑ:l, ʃʋestər] almost [kꜰɑ:l, ʃꜰestər].

The voiceless labiodental [f] is written **f** or **ff**, sometimes **v**, and **ph** (almost exclusively in words from the Greek): **fiel** and **viel** [fi:l], **laufen** [lɑŭfən], **Philosoph** [fi(:)lo'zo:f].

CLOSURE OF THE ORAL PASSAGES:

Stops without nasal resonance.

§ 114. As in the case of continuants, the stops (or plosives) generally go in pairs, one sound being voiced and weakly articulated, the other voiceless and strongly articulated (compare § 78). In grammars they are sometimes called 'media' and 'tenuis'; and both kinds of stops are known as 'mutes.'

§ 115. In the articulation of a simple stop we must distinguish (1) the making of a stoppage, and (2) the bursting through the stoppage by the breath; we may leave out of account the momentary pause between (1) and (2). Often at the beginning of words only (2) is important, and finally only (1); for the other half of the process is slow and imperceptible. Within the word both parts are distinct.

If the pause between (1) and (2) is noticeable, the stop is 'long' or 'double.'

§ 116. In English and German voiced stops occuring initially 'voice' comes a moment after mouth articulation (*i.e.* the sound begins voiceless and then becomes voiced); in English voiced stops occuring finally 'voice' ceases a moment before mouth articulation (*i.e.* the sound begins voiced and then becomes voiceless); in French the voiced

stops remain unchanged wherever they occur, except that finally the off-glide is perhaps oftener whispered than voiced.

§ 117. In middle and southern German we notice a treatment of stops similar to that of continuants (compare § 78). In place of voiced sounds we here find weakly articulated voiceless sounds; and these are often substituted also for **p**, **t**, **k**.

§ 118. *Aspirates*,[1] *i.e.* aspirated voiceless stops, (strictly [p^h, t^h, k^h]) occur regularly in English and German before accented vowels, and often elsewhere in accented position, especially when final; in this position aspiration is not unknown in French also.

§ 119. When a stop is followed by the corresponding nasal, as in [bm, pm, dn, tn], etc., the stoppage for the first sound often remains for the nasal. Instead of the bursting through the oral stoppage we then have the lowering of the velum as the breath passes through the nose; and this is heard. This kind of stop is a 'velar' or 'faucal' stop.

[1] Continuants are sometimes called 'spirants,' and this term has been confused with 'aspirates'; perhaps mainly because in Greek ϕ, θ, χ were at first aspirates, and then passed into continuants. The Latin transliteration **ph**, **th**, **ch** suggests the earlier stage; the English pronunciation of ϕ and θ as [f] and [δ, θ] represents the later.

Back or velar stops

and

Front or palatal stops:

voiced [*g*], voiceless [k].

§ 120. The stoppage is effected between the ridge of the tongue and

the back or soft palate, giving back or velar stops; or

the front or hard palate, giving front or palatal stops.

As a general rule, however, the distinction is unimportant; for the difference in articulation is much less than in the case of the continuants, and the acoustic effect is practically identical. Both back and front stops may be designated [*g*, k] for our present purpose.

§ 121. In ENGLISH voiced [*g*] is usually written **g**, and also **gg** within the word and finally: **gift** [*g*ift], **beg** [beg], **beggar** [beg*ə*], **egg** [eg]; sometimes **gu**, usually before front vowels: **guest** [*g*est], rarely **gh**: **ghost** [*g*oŭst]. The voiceless [k] is variously written, usually **c** or **k**: **keen** [ki:jn], **sick** [sik], **can** [kæn], **accuse** [ə'kju:wz], **chord** [kɔ:d], **queen** [kwi:jn], **tax** [tæks]; also **gh** in a few words.

The place of articulation varies according to the neighbouring sounds. The [k] is usually aspirated [k^h] before accented vowels, more rarely when final.

§ 122. In FRENCH the voiced sound is written **g**, and **gu** before front vowels (**e**, **i**, **y**): **gant** [*gɑ̃*:], **guerre** [*gɛ*:r]. The voiceless [k] is never aspirated when initial or within the word; it is usually written **c** (**cc**), **qu** (**cqu**): **camp** [kɑ̃], **qui** [ki].—When there is 'liaison' of (otherwise silent) **g**, it is pronounced [k]: **long usage** [lõk yza:ʒ], **rang élevé** [rɑ̃k elve].

The place of articulation varies according to neighbouring sounds; sometimes it is very far forward indeed.

§ 123. In GERMAN the voiced sound is represented by **g** [1] (except when final) and also by **gg** (within the word): **Tage** [tɑ:gə], **Siege** [zi:gə], **gut** [gu:t], **Gift** [gift], **Egge** [ʔɛgə]. The voiceless [k] (aspirated—much more than in English—[kʰ] before accented vowel, or after it when final) is written **k**, after a short vowel **ck**, and finally also **g** [1]: **Kohle** [ko:lə], **Birke** [birkə], **keck** [kɛk], **Tag** [tɑ:k], **Sieg** [zi:k]. In foreign words there are various other spellings: **Clique** [klikə], **Accord** [ʔɑ'kɔrt], **Chor** [ko:r]. Notice also in German words **qu** = [kv] (compare § 113) and **chs** = [ks], for which **x** also occurs: **Quelle** [kvɛlə], **Hexe** [hɛksə], **Fuchs** [fuks].

The place of articulation is usually the middle of the soft palate; but before or after 'front' sounds it is usually more forward.

[1] See however § 86 for the pronunciation of **g** as a continuant.

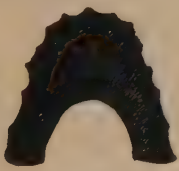
Teeth or dental stops:

voiced [d], voiceless [t].

§ 124. The place of articulation of the dental stops practically coincides with that of the various dental continuants (see § 91).

§ 125. In ENGLISH the voiced [d] is written **d** (also **dd** within the word): **do** [du:w], **adder** [ædə], **bed** [bed]. The voiceless [t]—aspirated [t^h] initially, and elsewhere, before accented vowel, and often finally —is written **t** (**tt**): **tell** [tel], **matter** [mætə];

English.



French.
[t]

German.
See p. 60.

also **d** in the **-ed** of verbs after voiceless sounds: **tapped** [tæpt]; rarely **th**.

The articulation is usually apical[1] and *alveolar* ('supradental'). English [t d] is a stoppage of [ɹ, r].

§ 126. In FRENCH the voiced sound is always written **d**: **dire** [di:r], **bande** [bɑ̃:d]. The voiceless [t] is not aspirated initially or within the word, and is written **t** (**tt**): **tirer** [tire], **perte** [pɛrt], **attendre** [atɑ̃:dr̥]; in borrowed words also **th**.—When there is

[1] Dorsal, according to Sweet; in which case we have a stoppage of a point-blade [s].

'liaison' of (otherwise silent) **d**, it is pronounced [t]: **grand homme** [grɑ̃t ɔm], **répond-il** [repɔ̃t i(l)].

The articulation appears to be usually dorsal and *alveolar*. Fr. [t d] is the stoppage of a somewhat retracted (but still dental) [θ ð].

§ 127. In GERMAN the voiced [d] is written **d** (**dd**): **da** [dɑ:], **leiden** [lɑĭdən], **Kladde** [klɑdə]. The voiceless [t]—aspirated [tʰ] initially, and elsewhere, before accented vowels, often also when final—is usually written **t** (**tt**), **th**, sometimes **dt**, and finally also **d**: **treu** [trɔĭ], **retten** [retən], **Stadt** [ʃtɑt], **und** [ʔunt], **Thron** [tro:n]. The combination [ts] is often written **z** (**tz**), in foreign words also **c**: **zu** [tsu], **Satz** [zɑts], **Cäsar** [tsɛ:zɑr].

The articulation is either apical and *pre-alveolar*, or dorsal and *alveolar*, *i.e.* intermediate between the Engl. and Fr. In the North of Germany it tends to be apical, elsewhere dorsal.

Lip or labial stops:

voiced [b], voiceless [p].

§ 128. In general the lip stops are bilabial, *i.e.* formed by a closure of both lips.

§ 129. In ENGLISH the voiced sound is written **b** (**bb**): **but** [bʌt], **babe** [be:ĭb], **ebb** [eb]. The voiceless sound—aspirated [pʰ] initially, and elsewhere, before accented vowels, and often finally—is written **p** (**pp**): **put** [put], **proper** [prɔpə], **happy** [hæpi]; very rarely **ph**.

§ 130. In FRENCH the voiced [b] is written **b** (**bb**): **bon** [bɔ̃], **robe** [rɔb], **abbaye** [abei]. The voiceless

[p] is written **p** (**pp**): **point** [pwɛ̃], **troupe** [trup], **frapper** [frape].

§ 131. In GERMAN [b] is written **b** (**bb**), and does not occur finally: **bei** [bɑɪ̯], **aber** [ʔɑ:bər], **Ebbe** [ʔɛbə]. The voiceless [p]—aspirated [pʰ] initially, and elsewhere, before accented vowels, and often when final —is written **p** (**pp**), finally also **b**: **Paar** [pɑ:r], **Rappe** [rɑpə], **ob** [ʔɔp].

In the combination [pf], as in **Pferd**, **Kopf**, the [p] is often formed labiodentally, *i.e.* by pressing the lower lip against the upper teeth.

Stops with nasal resonance: nasal stops or nasals.

§ 132. The stoppage is practically identical with that of the 'oral' or 'pure' stops [*g*, k], [d, t], [b, p].

While the latter are momentary sounds, in the case of the nasals the breath can pass freely through the nose, and they can consequently be continued as long as continuants or vowels.

As a rule they have 'voice.'

Back or velar nasal: [ŋ], and front or palatal nasal: [ɲ].

§ 133. In ENGLISH the place of articulation of [ŋ] is the same as for [*g*, k]—viz., the middle of the soft palate, except before front vowels, when it is farther

forward, roughly speaking, at the line between soft and hard palate. It is written **ng**, and **n** before **g** [g] and **k** [k]: long [lɔŋ:], strictly [lɔŋ:], singer [siŋə], finger [fiŋgə], think [θiŋk]. Within the word **ng** is either [ŋ] (**singer**) or [ŋg] (**finger**) (or [nʒ] (**strange**)). Before voiceless sounds [ŋ] often loses its 'voice,' at any rate towards the end, as in **length** [leŋθ].

§ 134. In FRENCH [ŋ] is not recognised as an independent sound. But there is a palatal nasal [ɲ], never formed farther back than the line between hard and soft palate; it is often followed by [j], becoming [ɲj]. It is written **gn** (when final, it is always followed by **e**): **régner** [reɲe], **Cologne** [kɔlɔɲ]. It sometimes becomes partly voiceless before voiceless sounds, as in **enseignes-tu** [ɑ̃seɲ'ty]. By assimilation we obtain the velar nasal sometimes, as in **une longue main** [yn lɔ̃ŋ mɛ̃].

§ 135. In GERMAN [ŋ] is written **ng**, and also **n** before **k** and—in foreign words—**g**: **lange** [laŋə], **lang** [laŋ], **denken** [dɛŋkən]. In foreign words **g** before **n** is sometimes pronounced [ŋ]: **Agnes** [ʔaŋnɛs], **Signal** [ziŋ'na:l]; better [ʔagnɛs, zi'gna:l].

> In northern German the French nasal vowels in borrowed words are often pronounced thus: [aŋ] for **an** and **en**, [ɛŋ] for **in**, [ɔŋ] for **on**, [œŋ] for **un**. In southern and middle German and on the stage the French vowel is usually retained. See above, § 74.

Teeth or dental nasal:

[n̪].

§ 136. In ENGLISH [n] the stoppage is the same as in English [d, t]. Before and after voiceless sounds, as in **hint, sneer,** [n] often loses its 'voice' in part. It is written **n (nn)**: **nine** [naĭn], **manner** [mænə].

§ 137. In FRENCH [n] the stoppage is the same as in French [d, t]. It is written **n (nn)**: **neuf** [nœf], **tourner** [turne], **bonne** [bɔn]. Long, or double, [n] is pronounced in 'learned' words, **inné** [in:e, inne]; and in proper names.

When final and before a consonant (except **n**) the **n**, together with a preceding vowel, indicates a nasal vowel; but in 'liaison' the [n] appears, in which case the vowel is less strongly nasalised: **un** [œ̃], but **un ami** [œ̃n ami], almost [œn ami]. Often the preceding vowel is then not regarded as nasal at all, and [yn ami] is pronounced.

In foreign words final **n** often has the value of [n], as in **amen** [amɛn], **hymen** [imɛn]. Rarely there is a nasal vowel within the word before a vowel or before a second **n**, as in **enivrer** [ãnivre] (also [anivre]), **ennui** [ãnɥi]. Sometimes [n] loses its 'voice' before or after voiceless sounds: **(je) ne sais pas** [n̥ se pɑ], **hanneton** [ann̥tõ], **des tenailles** [de tn̥ɑ:j].

§ 138. In GERMAN [n] the stoppage is the same as in German [d, t]. After voiceless sounds it loses its 'voice' wholly or in part. It is written **n (nn)**: **nein** [nɑĭn], **nennen** [nɛnən].

Lip or labial nasal:

[m].

§ 139. In ENGLISH [m] is bilabial, like [b, p]. It is written **m** (**mm**): **my** [maĭ], **summer** [sʌmə], **name** [neːĭm]. It loses its 'voice' towards the end—compare [ŋ] and [n]—before voiceless sounds, as in **lamp** [læmp].

§ 140. In FRENCH [m] is bilabial. It is written **m** (**mm**): **mon** [mõ], **blâmer** [blɑːme], **ferme** [fɛrm]. In some 'learned' words and proper names **mm** is pronounced as a 'double,' *i.e.* long, sound: **immortel** [imːɔrtɛl]. It serves to indicate a nasal vowel, like **n**. Before a second **m** there is sometimes a nasal vowel, as in **emmener** [ãmne]; and final **m** has the value [m] in foreign words and proper names: **Jérusalem** [ʒeryzalɛm], **album** [albɔm]. Voiceless [m̥] is the rule in certain combinations, such as **sme**: **prisme** [prism̥]; it also occurs occasionally elsewhere: **monsieur** [m̥sjø], **hameçon** [am̥sõ], (perhaps it is here rather [mm̥]).

§ 141. In GERMAN [m] is bilabial. It is written **m** (**mm**): **mein** [mɑĭn], **kommen** [kɔmən], **ihm** [ʔiːm]. It may become partly voiceless after initial **sch** [ʃ], as in **Schmerz** [ʃmerts], or in foreign words after **s**, as in **Smaragd** [smɑ'rɑkt], or **t**, as in **Tmesis** [tmeːzis].

	lips	*lip-teeth*	*teeth*	*front*—of tongue—*back*	*uvula*	*glottis*
ENGLISH:						
continuants	ʍ w	v f	ð θ	j		h
			z s ʒ ʃ			
liquids			l r			
stops	b p		d t	g k		
nasals	m		n	ŋ		
FRENCH:						
continuants	ʍ w	v f		j ç		
	ɥ ɥ̊		z s ʒ ʃ			
liquids			l r		ʁ	
stops	b p		d t	g k		
nasals	m		n	ɲ		
GERMAN:						
continuants	ʋ f	v f		j ç	g x	h
			z s ʒ ʃ			
liquids			l r		R	
stops	b p		d t	g k		ʔ
nasals	m		n	ŋ		
	lips	*lip-teeth*	*teeth*	*front*—of tongue—*back*	*uvula*	*glottis*

SOUNDS IN CONNECTED SPEECH.

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SOUNDS IN CONNECTED SPEECH.

§ 142. So far we have considered each sound separately. If, however, we consider all the sounds of a language, comparing them with all the sounds of any other language, we find that there is something characteristic in the mode of articulating them. We might say, that they all presuppose the same *basis of articulation*; and this we shall have to determine for each language. Again the sounds of a language do not occur separately, but as members of little groups, which again form the units of larger groups; and we must examine the '*timbre*,' *length*, *force* and *pitch* of each sound, as compared with other sounds; as well as the relative *loudness* (audibility), which plays an important part in the formation of *syllables*. Finally we shall consider the changes of a sound which result from its *position*, according as it is influenced by a preceding or following sound, or by both.

The Basis of Articulation.

§ 143. We can only suggest the various bases of articulation by showing in what respects those of other languages differ from our own.

Strictly speaking there is no uniform basis of articulation for all English speaking people, nor for Frenchmen, nor for Germans, just as the pronunciation is not uniform; we shall therefore single out the speech of educated natives of London, Paris and Berlin, which will enable us to notice some characteristic differences.

§ 144. The FRENCH mode of articulation is more definite, more tense[1] than ours: the tongue is in general much farther forward in the mouth. The lips are very active: they are strongly rounded or protruded, or the corners of the mouth are well drawn back; and the mouth is smartly opened. The timbre of the voice is bright and clear; and there is enough modulation to make us easily distinguish the musical intervals. The exhalation of breath is more uniform than in English (or German), and indeed tends to increase in force as it goes on.

Hence there are no lax vowels, in particular no lax [ʊ], [ɪ] and [ʏ] sounds (for the half-wide weak [ɑ], [o], [e] and [ø] sounds, compare § 166); also no lax consonants. On the other hand the [d, t] sounds and [z, s] sounds are farther forward than in English; the [l] is also farther forward and has a clearer sound than ours; and front [ɲ] takes the place of back [ŋ].— A further peculiarity is the nasalising of certain vowels, the passage to the nose not

[1] For tense and lax as applied to vowels, see § 40; as applied to consonants, see § 78.

being closed by the velum; and the presence of uvular [ʀ].

§ 145. In GERMAN the tongue is on the whole not quite so forward in the mouth as in French. The mode of articulation is between that and the English: it is more definite and precise than our own, which appears indolent to French and German ears. The lips are also distinctly more active than in English; the angle of the jaws is greater. The expiration is fairly uniform; and there is more modulation of the voice than in English.

Hence there are more rounded vowels, and there is less variety of indefinite (neutral) vowels. The [d, t] sounds and [z, s] sounds are farther forward; the [l] is also farther forward, and has a clearer sound than ours; the [ʃ] is strengthened by protrusion of lips. A further peculiarity is (at any rate in middle and northern Germany) the frequency of front and back continuants; and the presence of uvular [ʀ].

THE SOUNDS IN THEIR RELATION TO EACH OTHER.

Fundamental properties.

§ 146. We distinguish three fundamental properties of the sounds of speech: *length* (duration, quantity), *force* (stress, emphasis, 'dynamic' accent), and *pitch* (intonation, 'musical' accent).

When the formation of a sound is perfect, the force of the expiration is identical with the force of the mouth articulation; there is an 'equilibrium of the active and reactive forces of articulation' (Techmer). In order to maintain this equilibrium, long sounds are as a rule more tensely (firmly) articulated than short sounds, *i.e.* the long are tense, the short are lax. Again, when the expiration is strong, the pitch is higher; when the expiration is weak, the pitch is lower. Still, as deviations from the normal inter-relation of these fundamental properties are not uncommon, length, force and pitch are best considered separately.

§ 147. If we regard the sounds in the speech of an individual as a whole, it will depend on their length whether he speaks fast or slowly ('drawls'); it will

depend on their force, whether he speaks in a loud or low ('inaudible') voice; it will depend on their pitch, whether he speaks in a high or in a deep voice. A clear and distinct speech depends on all three, but principally on the force with which the sounds are uttered.—The peculiar character of each voice (which enables us to distinguish individuals by their speech) is largely due to the quality of the larynx, and partly due to the basis of articulation (see § 142).

§ 148. Connected words are uttered in *groups*, according to the length and force of each expiration.

When the groups depend on the length of the exhalation, they are also called *breath groups* (French 'groupes de souffle,' German 'Atemtakte' or 'Atemgruppen'); the line of separation between two consecutive groups lying between the end of one expiration and the beginning of the next.

When the groups depend on the force of the exhalation, they are called *stress groups* (French 'groupes de force,' German 'Nachdruckstakte or -gruppen'); the line of separation between two consecutive groups lying at a point where the stress, after falling to a minimum, begins to rise again.

In practice the breath groups and stress groups cannot always be considered separately; they may either coincide or not; and further, there is variety in the usage of individual speakers. The division of connected speech into groups is therefore to a large extent subjective, depending on each individual; ex-

cept in so far as these groups coincide with sentences or clauses (or even single words) which are separated by pauses (of breath, and at the same time logical; usually indicated in writing by means of punctuation).

Designation:

§ 149. The length of sounds is here indicated by the addition of [:] or of [·] to indicate half-length; the force of sounds is generally only indicated where a syllable has the chief stress, here by ['] preceding the first sound of that syllable.

The pitch of sounds is sometimes indicated by [/] for rising and [\ ] for falling tone, [Λ] and [V] representing combinations of these.

The general tone of voice is sometimes indicated by [˥] for a high and [˩] for a low voice. The rate of speech and the degree of loudness is not usually indicated.

The 'groups' are in some transcriptions separated by a vertical line [|]; in others the words are either not separated or separated by hyphens [-], and blank spaces are left between the groups.

LENGTH

§ 150. For general purposes it will suffice to use the old, purely relative, distinction of *short* sounds, *e.g.* [u], and *long* sounds, *e.g.* [u:]; now and then we shall also require the term *half-long*, indicating length intermediate between 'short' and 'long.'

Although the term 'length' or 'quantity' is generally applied to vowels only, we find differences in length in the case of consonants also, including even the stops (sometimes called 'momentary' sounds).

§ 151. The length of a stop is the time that elapses between the formation of the closure and its opening. Only when the stop is at the beginning of a word can we really say that the sound is 'momentary'; for in this case the formation of the closure is not audible, and the sound as such does not come into existence until the closure is opened. On the other hand, we may (it is not essential) produce a stop at the end of a word without any audible opening of the closure; in that case the sound as such results from the formation of the closure, which is audible when it follows another sound.

Long stops easily give the impression that they are double sounds, especially owing to the fact just mentioned, that under certain circumstances the

formation of the closure by itself and the opening of it by itself may have the value of a stop, and also to the fact that in long stops the closure is usually opened with increased force.

Long continuants and vowels may also be regarded as double when there is an increase of force in the course of their production; see the examples in § 155.

Vowels.

§ 152. In ENGLISH the rules for the quantity of vowels are, according to Sweet:

Long vowels only occur in syllables with strong stress (rarely where stress is not quite strong); finally, *e.g.* [ə:] in **err**, **fur**, and before voiced consonants, *e.g.* [ɑ:] in **hard**, [ɔ:] in **all**. Except these three [ɑ: ɔ: ə:] there are no simple long vowels; they are followed by [ə], or by [w] (in the case of 'long **u**'), by [j] (in 'long **e**,' as in **seen**), by [ŭ] (in 'long **o**'), by [ĭ] (in 'long **a**,' as in **pale**). The second element of these diphthongs shares the length of the first, so that in the [u:w] of **who**, the [i:j] of **he**, the [o:ŭ] of **rode**, and the [e:ĭ] of **pale**, each element is half-long.[1]

Before voiceless sounds the long vowels [ɑ: ɔ: ə:], as well as the diphthongs [u:w i:j o:ŭ e:ĭ] are reduced to half-length; and in syllables which have not the

[1] The mark over [ĭ] and [ŭ] must not be taken to indicate that the vowel is short; it implies that the vowel is unable to bear a syllable, that it is a *voyelle consonnante*, not a *voyelle syllabique*.

chief accent they are also half-long, or short. Examples: [ɑ:] in **hart**, [o:ŭ] in **wrote**, [ɔ:] in **almighty**.

When a 'short' vowel precedes a final voiced consonant, it often becomes half-long; *e.g.* **bad, his.**

In slow and emphatic speech the final [eᵊ] in **pity, steady**, etc., and sometimes the [ə] in **better**, etc., are half or quite long.

Accented *short* vowels occur in final syllables (or in monosyllables) before voiceless consonants, as in **bat, hiss**; often also in other than final syllables, as in **better, natural**, etc. Unaccented short vowels are very common.

The relative value of 'long' and 'short' vowels in English has not yet been satisfactorily determined.

§ 153. In FRENCH the following rules have been given by P. Passy:

Vowels are *long* in syllables with chief accent (before a pause) before the voiced continuants [r z ʒ v j]; *e.g.* [ɛ:] in **faire**, [y:] in **ruse**, [a:] in **nage**, [i:] in **rive**, [œ:] in **feuille**; similarly where **-je** is added to a verb with final vowel, as in **dis-je** [di:ʒ]. The sounds [ɑ o ø], and the nasal vowels are long before other consonants also. But before the consonant sound due to 'liaison' the vowel is not lengthened: **pas ici** = [pɑz isi] with short [ɑ]; in the same way, **méchante** is [meʃɑ̃:t], but **méchant et vilain** is [meʃɑt e vilɛ̃] with short [ɑ].—Before consonants that are not voiced continuants the other

vowels (except [ɛ]) are rarely long, even when a pause follows. All final vowels are also *short* as a rule.

§ 154. In GERMAN the vowels of accented syllables are long or short.

The *long* vowels (except [a:] and [ɛ:] they are all close) occur finally, with or without accent, *e.g.* [a:] in **ja, da, Emma**. The only final vowels that are short are the unaccented [ə], and [a] in interjectional **na, da, ja**. The vowels are long also before a single consonant or before a combination of consonants which could begin a word, *e.g.* [i:] in **ihr, Mitra** (the syllable is *open* when it ends in a vowel, as in **ihrig** = **ih-rig, Mitra** = **Mi-tra**). It is less common for a vowel to be long when a combination of consonants follows which could not begin a word, *e.g.* [o:] in **Mond** (then the syllable is *closed* and remains so even when a vowel follows the consonants: **Mon-de**; in many cases, however, such syllables were open in an earlier stage of the language).

In syllables with secondary accent, virtually long vowels become half-long or even short, *e.g.* [e] in **Sekretär**, [i] in **Militär**.

Accented short vowels, which were short also in the earlier stages of the language, as [ɛ, ɔ], are almost confined to 'closed' syllables, and are 'open' sounds.

In the ordinary spelling the consonant is doubled after a short vowel within the word, and often finally, as in **füllen, satt**; and the length of a vowel is often indicated by adding **h**, by doubling the vowel, or—

[1] 'Long' in German means a little more than 'long' in English.

sometimes in the case of **i**—by adding **e**: **Mehl, That, Saat, dieser,** etc.

The relative duration of German 'long' and 'short' vowels has been variously estimated; it naturally differs according to dialects and even individuals.

Brücke obtained the proportion 5:3, Kräuter 3:2, Ph. Wagner (Reutlingen dialect) 3:2.

Viëtor's measurements of his own speech (Nassau) gave the following results:

Relation of long to short 2 (average 0.3 second): 1 (average 0.15 second); and he arrived at the following results, taking this scale: 0.1 second, over-short; 0.15 second, short; 0.2 second, half-short; 0.25 second, half-long; 0.3 second, long; 0.35 second, over-long.

The 'long' vowels are—I. 'over-long' in final syllables with the chief stress before a pause (1) when not followed by a consonant, (2) when followed by a single consonant (or by a liquid and a consonant); II. 'long' (*a*) in syllable with chief stress (1) when the syllable is final and the vowel is followed by a combination of consonants, (2) in the last syllable but one, or in a syllable that was formerly 'open,' and (*b*) in the syllable following a syllable with chief stress and 'over-long' vowel; III. 'half-long' (*a*) in syllable with chief stress, preceding the last syllable and ending in a combination of consonants, (*b*) in the syllable following a syllable with chief stress and 'long' vowel; IV. 'half-short' if in a syllable preceding the chief stress.

The 'short' vowels are—I. 'half-short' in syllables with chief stress (1) in last syllable before a single

stop, (2) in last but one before a double (*i.e.* long) stop; II. 'short' (*a*) in syllables with chief stress, (1) in last syllable when no consonant follows, (2) in last but one, or in a formerly 'closed' syllable, (*b*) unaccented, final e [ə]; III. 'over-short': accented in last syllable, before liquid or liquid and consonant.

The diphthongs are on the whole treated like the long vowels.

Consonants.

§ 155. In ENGLISH there is a marked difference between long and short consonants. According to Meyer, final stops after long vowels are decidedly short; the shortest final is [d] after a long vowel: it may be called over-short. The length progressively increases, not only when the preceding vowel becomes short, but still more when the consonant ceases to be explosive, ceases to be voiced, and ceases to be dental (apical). But [l, m, n, ŋ], though voiced, are always long, and over-long after a short vowel. The prolongation of these consonants before voiced final consonants (**build, pens**) is still greater; but before voiceless final (**built, pence**) they cease to be long, without becoming short. When by the addition of an unaccented vowel, the word becomes dissyllabic, and the consonant medial, all these differences shrink considerably. Initial consonants, if single, are nearly always of middle length.

Long consonants also occur where words are closely connected or compounded, as in **wild duck, ripe pear**: here the formation of the closure is the 'first **d** (**p**)' and the opening of it is the 'second **d** (**p**)'; or in **slim man, full list, with them**: here the sound gains a fresh value through an increase of force, and the consonant becomes 'double,' or the [m, l, ð] are simply lengthened. In somewhat careless speech the simple consonants are substituted.

§ 156. In FRENCH (according to Ph. Wagner) the consonants are long or over-long before a pause, the quantity of the preceding vowel being immaterial. In cases like **mont(ent) tous, la nett(e)té, là d(e)dans,** the [t:, d:] are over-long, and long when they are some distance from the final syllable of the group, as in **le temps d(e) transmettre** (d(e)t = [t:]). Long also is the initial [s:] in **sais pas** (for **je ne sais pas**), and [t:] in **temps en temps** (for **de temps en temps**). In cases like **illégal, illusion,** etc., and **irrité, irrégulier,** etc., there appears to be no lengthening (Ph. Wagner). Rousselot gives the following rules as the result of his own experiments:

Stops are a little shorter than continuants. Voiced sounds are often shorter than voiceless sounds. The length of the consonants is in inverse proportion to the length of the word. There is an 'accent of time or duration' which lengthens certain consonants.—The 'doubled sounds' are single consonants with greater force and double length.

§ 157. In GERMAN the length of consonants (especially continuants, including nasals) is to some extent affected by their position; *e.g.* [m] is short initially, but long when it is final and follows an accented vowel.

Long consonants also occur (as in English, compare § 155) when words are closely connected or compounded; *e.g.* **mitteilen, Packkorb** and **Tauffeier, Baummeise, Stilleben.** Here, too, the simple consonants are substituted in careless speech.

FORCE

§ 158. The sounds and small or large groups of sounds in ordinary speech are not uttered with uniform force; there is either a decrease [>] (decrescendo) or an increase [<] (crescendo) in the force with which the breath is exhaled; and the force with which the consonants are articulated (*i.e.* the force employed for forming a 'narrowing' or 'closure') usually decreases or increases in the same proportion (see § 146). We can therefore distinguish various degrees of force if we compare the parts of a sound or of a group of sounds. This is more easily done if we whisper the sound or sounds, as our ear is then not confused by the addition of 'voice.' Accurate results can obviously be obtained only by mechanical methods.

§ 159. Differences in the force of exhalation are most important in the case of vowels. A relatively greater or greatest degree of force is called *stress*; the vowels concerned are *stressed*.

§ 160. If we take *the stress of a syllable*, we can investigate the nature of this stress; and, if the syllable contains more than one vowel, we must determine which has the stronger stress. If the

first of two vowels has the greater sonority (loudness), the diphthong is 'descending'; if the second, the diphthong is 'ascending' (see § 56); and 'level,' if they have the same stress. The symbol for level stress is [=].

§ 161. We determine *the stress of a word* by finding out the vowel in it which has the chief (principal, strongest) stress; the other vowels either have secondary stress, or they are unstressed. In accordance with this, we distinguish 'strong,' 'half-strong' and 'weak' syllables. When several syllables have the same stress there is 'level stress.'

When a language shows a wide range between the extremes of 'strong' and 'weak' expiration, the unaccented vowels tend to change into the indefinite vowel sounds [ə], etc. On the other hand, there is considerable variety in the force of the secondary stresses; and the formation of compound words is easier.

§ 162. There is further the *stress of the sentence*, obtained by ascertaining the most strongly pronounced vowel of the sentence; and there are also secondary stresses of varying force.

§ 163. This stress of words and sentences serves to emphasise certain ideas; it is 'emphatic' stress. This explains why the stress of the word must yield to the stress of the sentence. Some words (enclitics and proclitics) lose their stress under certain circumstances.

§ 164. The force of expiration is a matter of some importance in the case of consonants. It generally

depends on the degree of force of the expiration possessed by the preceding or following vowel at the moment when the two sounds meet.

Among the consequences of strong expiration are: the change or 'shifting' of voiceless stops to aspirates and affricates, *e.g.* [p] to [p^h] and [pf]; the shifting of voiced sounds to voiceless sounds, *e.g.* [b] to [p]; the development and retention of distinct [h] sounds; the development and retention of the glottal stop (compare § 32); partly also the retention of final 'unaccented e.'

§ 165. ENGLISH. Taking first the stress of the *syllable*, we find that generally the diphthongs are 'descending' or decrescendo diphthongs: [aĭ] = **i**, [aŭ] = **ou**, [ɔĭ] = **oi**, [o:ŭ] = **o**, [e:ĭ] = **a**, etc.

In the *word* also the accentuation is usually descending; the chief stress falls upon the syllable which is logically the most important, *i.e.* the stem syllable, which usually comes first in the word. This principle has been adopted even in the case of foreign words; compare the native **holiness** ['ho:ŭlinis] and the foreign **memory** ['meməri]. In unstressed syllables an original **a**, **o**, **u**, and also **er**, etc., regularly becomes the 'neutral' vowel [ə]: **Arab** [ærəb], **almoner** [a:mənə].

There are many *compound words*; frequently they are separated in writing. The rule used to be that the chief stress was on the first part [>]; according to Sweet the following now holds good, if we consider the accentuation of compounds with regard to their meaning: level stress [=] contrasts, and uneven

stress ([>], less frequently [<]) unites the ideas expressed by the compound words.

Hence (according to Sweet) there is level stress (*a*) in the combination of substantive and substantive, the first having attributive force: **steel pen, garden wall** (but > in the case of natural objects when the two ideas have become blended into one: **butterfly, blackbird** (but **black bird** with =); similarly compounds with **street** have > accentuation, but those with **road, square**, etc., =); (*b*) adjective (or adverb) and adjective: **good-looking, twenty-five**; (*c*) inseparable compounds in which the second part has a clearly marked meaning: **undo, thirteen**; (*d*) interjections: **hallo, bravo**; also in the foreign **amen**; (*e*) foreign names: **Hongkong, Chinese.**

The > accentuation is found: (*a*) when the compound denotes a casual relation, an action or a natural phenomenon: **rainbow, walking excursion, earthquake**; (*b*) in an otherwise = compound, if it is employed as an attribute before a substantive: **thirteen men.**

The < accentuation is found (*a*) in 'constant' combinations of substantives with **of**: **bill of fare**; (*b*) in title and name: **Mr Smith**; (*c*) in forms of address: **good morning!**

There is often aspiration of initial and final voiceless stops before and after the vowel which bears the chief accent; thus **two** [t^{h}u:w], **not** [nɔt^{h}].

Initial [h] is weak, and often in danger of being lost; it regularly disappears, even in educated speech, in the 'weak' forms of certain monosyllables (see § 29).

The final 'unstressed **e**' has long been lost; and the final [ə], even where it is not = **er, or,** etc., in uneducated speech often takes a [r] sound: **idea of** [aĭdi:ər ɐv]. This is now sometimes heard even in educated speech.

Enclitics are common; here **a, o, u** (and sometimes other vowels) are reduced to [ə]. This leads to numerous pairs of ('strong' and 'weak') forms: **and** [ænd] and [ənd] or [ən], **from** [frɔm] and [frəm], **us** [ʌs] and [əs], etc.

The accentuation of the *sentence* has also a logical basis. But—particularly in educated speech—there is not a very great range between the extremes (chief stress and no stress), so that sometimes subject and predicate (or even subject, predicate and object) appear to have the same accent, and the sentence appears to have = rather than < accentuation (which is clearly the case in attributive adjective and substantive). The syllables with secondary stress very often become quite unstressed.

Where there is a contrast, a strong stress is regularly employed to mark the contrasted words.

There is, besides, a distinct tendency to *rhythmic* accentuation in polysyllables, in compounds, and in the sentence.

§ 166. In FRENCH the stress is far less strongly marked than in English; and the tendency as regards its movements is directly opposed to the Teutonic.

In the *syllable* there are the 'ascending' diphthongs [wɑ, wa] = **oi,** [je] = **ie,** [wɛ̃] = **oin,** [jɛ̃] = **ien,** etc., with < accentuation.

In the *word* there is the same ascending accentuation; the last sonorous syllable bears the stress; **jamais** [ʒa'mɛ], **pardonner** [pardɔ'ne], **considération** [kɔ̃sidera'sjɔ̃]. This is the rule in theory; but in practice other influences frequently cross it. The first, or some other preceding syllable usually has a secondary stress, which becomes particularly obvious to the ear when it is combined with a higher pitch of the voice. It is not uncommon for this stress to have greater force even than the normal stress of the word; this is especially the case when the last syllable but one is long: thus **baron** is ['ba:rɔ̃] rather than [ba:'rɔ̃], and **beaucoup** is ['bo:ku] rather than [bo:'ku].

We find very much the same influences at work in the *sentence*. The rhetorical element is far more important than in English; and the *rhythmic* tendency is very marked. For instance, in **le roi Jean** the stress is on **Jean**, but in **le roi Théodoros** the syllables **roi** and **-ros** are stressed.

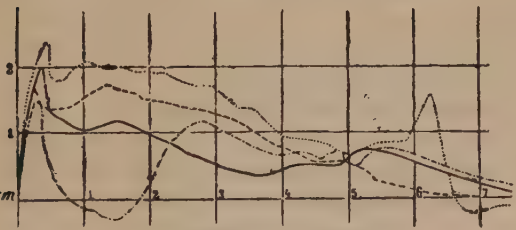
Where there is a contrast the stress shifts to the syllables which mark it: **se soumettre ou se démettre**, with strong stresses on **sou-** and **dé-**.

The absence of stress causes long vowels to be reduced to half length (*e.g.* **rase** and **raser**), and changes the short [ɔ, a, e, ɛ] to sounds approaching [ə], as in the vowels preceding the accent in **comment, mardi, méchant**; when the syllable is weaker still these vowels (as also [ø] and [œ], and occasionally others) actually become [ə], as in **peut-être, déjeuner.** This [ə], unless its position preserves it, **may drop out** altogether (as

[ə] of **le** in **je le dis**); on the other hand when it is accented it may become a full [œ] (as **e** in **dis-le**). —Consonants also frequently disappear in weak syllables; thus in ordinary conversation the **l** of **il** is dropped before a consonant. Instances of 'strong' and 'weak' forms are, *e.g.* **le** [lə] and **la** [la] before consonants, and **l'** [l] before vowels.

§ 167. In GERMAN there is mainly > stress in the syllable as well as in the word.

The stress of a long vowel in an 'open' *syllable*



. —— assertion, - - - - - question,
. . . . anger, ... warning.

(*e.g.* **du**) has been ascertained by means of the cymagraph. The results are shown in the accompanying diagram, which gives the characteristic curves for the word **du** according as it is pronounced in a tone of (1) assertion, (2) question, (3) anger, (4) warning.

The diphthongs [aĭ] = **ai, ei**, [aŭ] = **au**, [ɔĭ] = **eu, äu** are stressed on the first element.

In the *word* (in almost all cases where it is really German) the stress is on the stem syllable, which is

logically the most important, and—as in English—this is the first syllable in simple (uncompounded) words: **Héiligung, árbeitete**; exceptions: **Forélle, Holúnder, Hornísse** (but also **Hórnisse**), **lebéndig, Wachólder**; also **luthérisch.** There is a secondary stress on the second syllable of **Élènd, élènd**; both [ʔe:lɛnt]. Foreign words usually retain their original accent: **Dóktor**, pl. **Doktóren, Hotél**; old loan words, or foreign words that are much used, receive German accentuation: **Fénster, Dútzend, Kógnak.** Foreign suffixes, *e.g.* **-ei, -ieren, -ur** are stressed, even when they have been added to German stems: **Betteléi, hausíeren, Glasúr.** The foreign accentuation is also found in the originally Slavonic names in **-in** of some north German towns: **Berlín.**

The stress varies in some words which are frequently contrasted with certain other words that have the same or similar terminations: **Síngular—Plúral, Ínfanterie—Kávallerie,** instead of **Singulár, Infanteríe**, etc. Similarly, an otherwise quite unstressed syllable may receive the chief stress, if it is to be particularly emphasised, especially for purposes of contrast: **gégàngen** ['ge:gaŋən], **nicht vérgàngen.**

There is a greater range between the extremes (chief stress and no stress) than in English. The syllables with 'chief stress' are very strongly marked. On the other hand the unstressed vowels have in many cases passed into 'unstressed **e**,' *i.e.* [ə]. The great range of accentuation makes it possible to have much variety of force in the secondary stresses; hence German lends itself particularly well to the formation of long compounds.

The first element of *compound words* usually has the chief stress, as being the determining word, as in **Sónntagshèiligung**; the stress in **Jàhrhúndert** follows the same logical principle. Level stress is much less common: **stéinréich**; it usually indicates that the two parts of the compound are logically equal.

Ascending stress is found in the following cases:

In substantives: (*a*) in words like **Hòhepríester** (for **hohe Priester**); (*b*) in geographical names and in names of festivals, etc., the first part of which is an adjective or a genitive: **Nèuwíed, Èberswálde** (but **Kárlsbàd** and some others); also **Nòrdóst**, etc.; and **Grŭndónnerstag, Frònléichnam** (**Fron** originally 'of the Lord'); (*c*) in many compounds, the second part of which is itself a compound and 'heavier' than the first part: **Òberfórstmeister** (but **Óberfŏrster**); (*d*) in compounds which have the chief accent far from the end: (sometimes) **Làndgerìchtsdirèktor**, as though it were **Land** + **Gerichtsdirektor** (compare (*c*)), and not **Landgerichts** + **Direktor.**

In adjectives: (*a*) in words like **bàldmŏglich** (for **so bald wie möglich**), and in derivatives like **hòhepríesterlich**; (*b*) when the first part is **all-** (giving emphasis): **àllgeméin**; (*c*) when the first part is **alt-**, and the second refers to a nation or country; **àltíndisch** (but usually **áltdèutsch**, and **áltfrànkisch** in the sense of **áltmòdisch**); (*d*) in several adjectives in **-lich** and **-ig** (in most cases the middle syllable is 'heavy'): **àbschéulich, bàrmhérzig** (in some the accentuation varies, *e.g.* **absichtlich, armselig**); (*e*) un- + verbal adjective: **ùnhŏrbar**; (*f*) in **lèibéigen, vòllkómmen, wìllkómmen**; also in **àusgezéichnet.**

In verbs: (*a*) with **miss-**: **mìssbráuchen** (**míssdeùten** is rare); (*b*) with inseparable **voll-**: **vòllénden**; (*c*) with inseparable **durch-**, **hinter-**, **über-**, **um-**, **unter-**, **wider-**: **dùrchdríngen**, **hìnterbríngen**, **übersétzen**, etc. (in the verbs with separable and accented **durch**, etc., the prefix is still distinctly adverbial; thus **dúrchdringen** = **durch dringen**, **hindurch dringen**).

In particles (instead of level stress): **bèrgáuf**, **vòrhér**.

Level stress is found in the following cases:

In substantives: (*a*) in names like **Héssen-Nássau** (for **Hessen und Nassau**), but here frequently <; (*b*) in compounds with **Erz-**, where this prefix merely serves to give emphasis and has lost its original force (= Greek **archi-**): **Érzschélm** (but **Érzbìschòf**); (*c*) in long compounds, the two parts of which are themselves compounds: **Rèálschùlóberlèhrer.**

In adjectives: (*a*) when the first part merely serves to emphasise the second: **stéinréich** (see above); (*b*) when the word is so long that one accent seems insufficient: **únwiederbrínglich** (but also **ùnwiederbrínglich**).

The accentuation of particles is usually =, but sometimes becomes < or >, owing to the rhythm of neighbouring words: **bérgáuf** and **bèrgáuf**; **wéitáus**, **wèitáus**, and **wéitàus.**

Such variation occurs in adjectives also: **er ist stéinréich**, but often **ein stéinrèicher Mann.** On the other hand words naturally accented > or < may receive level stress if they are strongly emphasised: **eine fúrchtbáre Kálte** (**Kàlte**); in such cases > may also become <; in the last example we might also have **fùrchtbáre.**

These are examples of a tendency to *rhythm*; as other instances we may take words like **Landgerichtsdirektor** and **Realschuloberlehrer** mentioned above.

Owing to the force of the word stress, the voiceless stops initially before, and finally after, a stressed vowel pass over into aspirates: **Kind** [kʰintʰ], **tot** [tʰo:tʰ], **Pack** [pʰakʰ]. The force of the stress also explains the energetic initial [h], as in **Halt** [halt], **hier** [hi:r], and the retention of the glottal stop: **echt** [ʔɛçt], **alle** [ʔalə]. This applies to the secondary no less than to the chief stress: **Schósskìnd** with [kʰ], **Ánhàlt** with distinct [h], **únècht** with [ʔɛ].

Words often lose their stress in the sentence; and some (enclitics and proclitics) have 'strong' and 'weak' forms according to the force of the stress: **er** = [ʔe:r] or [ʔɛr] or [ʔər] or even [ər]; **der** = [de:r] or [dɛr] or [dər], etc. An extreme case of this is the complete loss of words, *e.g.* **Mórgen**! for **guten Mórgen**!

In the *sentence* we observe an accentuation which obeys very much the same principles as that of the word. Often the groups of a sentence (see § 148) coincide with the words, and then have > accentuation. But taking the sentence as a whole the < (crescendo) is the rule; for the subject usually goes before the predicate, and it is the predicate which, as a rule, supplies the 'determining' element of the sentence and therefore has the chief stress, while the subject usually has a secondary stress: "**ich schréibe**," "**der Hùnd béllt**," "**er ist kránk**." If the predicate has an object, then the object is the 'determining'

word, and therefore has the chief stress of the sentence: "**ich schrèibe einen Bríef.**" In compound tenses, in inverted clauses, and in secondary clauses, the accentuation changes also, and < becomes > or < >. The attributive adjective has a rather weaker stress than the word to which it belongs: "**die kìndliche Líebe**" (but "**die Lìebe der Kínder,**" "**zu den Kíndern**"). Where there is a contrast, the emphasis on the contrasted words counteracts the usual tendencies of sentence accentuation: "**ist ér krànk (oder síe)?**"

PITCH.

§ 168. All voiced sounds necessarily have a certain musical *pitch* (or intonation); and, though this is most important in the case of vowels, the term 'voiced sounds' here, as usually, includes voiced consonants.

In ordinary speech the voice does not remain for any appreciable time on one note, but is continually gliding to a higher or lower note. If we dwell on each separate sound, giving it a uniform musical value, speech becomes a recitative or a song.

§ 169. *Uniform* tone does indeed occur in speech, especially in the short vowels; we here have to distinguish at least three varieties, a *high* tone [ˉ], a *middle* tone [—] (or no symbol), and a *low* tone [_].

But far more frequent—not only in the sentence or in polysyllables, but also in the syllable—is *rising* [/] or *falling* [\ ] tone, and of compound tones the commonest are the *rising-falling* [∧] and the *falling-rising* [∨].

These terms correspond very roughly to the actual facts. The musical interval between the highest and lowest note in a case of a rising or falling tone may be of very varying length; and it may not be a simple rising or falling, but a series of rises and falls, which can only be

accurately determined by mechanical means, the human ear being unable to distinguish more than the general result of these infinite variations of pitch.

Apart from the intonation of the sentence we must take into account the *tone of the voice* as a whole, which may be high [⌜], middle, or low [⌞]; in the case of women and children the tone of voice is higher than in men (see § 10, note 3).

§ 170. In ENGLISH the simple rising or falling tone has the same value as punctuation in written speech. The falling tone is used for making or confirming a statement; the rising tone asks a question or prepares for the making or confirming of a statement; in the second part of an alternative question there is falling tone. The compound tones on the other hand usually serve to express various states of emotion; the rising-falling tone suggests stubbornness or surliness, and we use the falling-rising tone in order to give a warning. Certain monosyllables, such as **yes**, **no**, **hm**, **oh**, etc., may represent a whole sentence, and the intonation of that one sentence will be crowded into the tone in which the monosyllable is uttered.

The range between the highest and lowest note varies according to the dialect of the speaker, his temperament, and the particular emotion to which he is giving expression. It may be as much as two octaves in the same syllable; sometimes the most important members of a sentence do not differ by

more than half a tone, or are even quite of the same pitch.

The following diagram is a facsimile of the cymagraphic representation of du, showing the waves of sound.

§ 171. In FRENCH the intonation is more musical; the notes are clearer and the intervals more distinct. In the use of falling and rising tone, etc., French agrees on the whole with English; the compound tones are particularly common. The average pitch of voice is higher than in English.

§ 172. In GERMAN the intonation is very similar to our own. There is rather more variety of musical tone; and the average pitch of the voice is higher, though not as high as in French.

SONORITY; FORMATION OF SYLLABLES.

§ 173. The degree of *sonority* (loudness) of a sound, or in other words the distance to which it will carry, depends on various factors: whether there is 'voice' or not; whether the 'voice' is the more or the less important part of the sound—which again depends on the accompanying resonance or noise (friction, etc.); and if there is no 'voice,' whether the noise is more or less distinct—which depends on the articulation employed.

§ 174. The vowels possess sonority in the highest degree; for they are voiced, have resonance, and the passage through the mouth is free. As the passage is widest for [a], this sound has greater sonority than any other. Then come the voiced liquids and nasals; they are voiced sounds with resonance and with no great narrowing of the mouth passage, or with free passage through the nose, the mouth being closed. After these are the voiced, and then voiceless continuants and stops; the voiceless [s, ʃ] being particularly marked owing to their sharp sound.

§ 175. In sounds otherwise identical there may be varying degrees of sonority according to the force of expiration, the pitch, the length (especially in the case of vowels), and the energy of articulation (in the case of consonants).

§ 176. According to its sonority a sound is more or less distinctly audible. The least sonorous, viz., [k, t, p], could not be heard even at a short distance; [g, d, b] carry a little further, and so on. Sounds that are weak in this respect may become more distinct if associated with more sonorous sounds; and thus the vowels, being most sonorous of all, are not only themselves audible at a very great distance, but can also make a number of preceding or following sounds carry far.

§ 177. Apart from their own sonority, they therefore form a kind of support for weaker sounds: they may be said to carry the *syllable*. The term 'syllable' is also applied to an isolated vowel, or to a vowel standing beside other vowels equally sonorous, sometimes also to other sonorous sounds. If a syllable-carrying vowel has had as much as it can bear joined on to it, the rest is dropped, unless it can obtain the help of some auxiliary vowel, or unless it possesses sufficient sonority to become a syllable itself (compare French esprit).

As a rule, it is vowels that 'carry' the syllables; but this can also be done by liquids and nasals (not, however, in syllables with chief stress in English, French and German, except perhaps in interjections like the German brr [br]), and by the voiceless [s,ʃ], also in interjections: [pst], [hʃ], etc.

§ 178. A consonant between two vowels (in English and German) usually belongs to both syllables. It is impossible, therefore, always to divide off the syllables according to their pronunciation; and

where the exigencies of writing or printing demand it, we often find inconsistencies. Thus we divide **lead-ing**, but in German it is **lei-dend**; the pronunciation of the **d** being the same in each case, as it belongs to both syllables, the closure to the first, the opening to the second.

If, however, there is a change of force, *i.e.* a weakening and then again a strengthening of pressure in the current of breath, we can be in no doubt as to the division between the syllables; for here it coincides with the change of force. Thus the **d** in English **ado** or German **Geduld** belongs to the second syllable.

INFLUENCE OF OTHER SOUNDS.

Assimilation and Dissimilation.

§ 179. Initial sounds are often influenced by the sounds which follow, final sounds by those that precede, and sounds occurring within the word by those on both sides. In dealing with the resulting changes, we must take into account that a sound may begin or end a written word, and yet not be treated as an initial or final sound, because it is *within* a breath group. In **I saw Tom and Jack d** is the final of **and** if we consider the word by itself; but if we take it as part of the breath group, we can no longer regard it as a final.

§ 180. The general rule is, that when two sounds come together, those movements of articulation which are common to both are executed once only, as far as that is feasible (Winteler).

§ 181. Sometimes certain movements of articulation are made a little sooner or kept up a little longer than the sound really requires, and this somewhat modifies a preceding or following sound (or even sounds).

Thus a sound may become voiced (or voiceless) through the influence of neighbouring voiced (or voiceless) sounds; a sound may be 'mouillé' (palatal-

ised) by the front of the tongue being raised before the [i] sound is actually pronounced; or rounded (labialised) by the lips being rounded before the [u] sound is actually produced.

A large number of the changes recorded in Historical Grammars are due to these tendencies; they are to some extent reflected in the conventional spelling, but become clear only when the nature of the spoken sounds is realised.

Vowels.

§ 182. In ENGLISH the most striking changes have been caused by a following [r], now [ə(r)]; compare **far, fare** with **fat, fate**. The same tendency is still at work, *e.g.* in **poor** [pu:ə, pɔ:ə]. Here there has been change in the *place* and *manner* of articulation. Its *duration* has also been changed in some cases; compare, for instance, the frequent lengthening of [ɔ] before [f, ft, s]: **off, oft, loss**. Again short vowels before final voiced consonants become half-long or long: **bad, dig**; and long vowels (particularly diphthongs) become half long before voiceless consonants: **fate, poke**. Place, manner and duration of articulation are altered in the change from [æ] to [ɑ:] before a dental, as in **past, dance**, which is not yet universal.

The double forms [ðiˌ ðə] = **the**, and [tu, tə] = **to**, vary according to the following sounds; the first of each pair being used before vowels, the second before consonants.

As an example of *dissimilation* we may take the

diphthongising of original long vowels which is still in progress ([eːɪ̯] in **day** is going on to [ɛːɪ̯, æːɪ̯, aːɪ̯]).

Final stressed vowels are long or diphthongal: **ah, day**; unstressed [i] or [eˑ] and [ə] may become half-long: **steady** ! **never** !

§ 183. In FRENCH the *place* and *manner* of articulation is also influenced by a following [r]; and the *duration* too, as in **fer, mort, heure**, except in **-er** with liaison, as in **premier âge**. The sound [v] has a similar effect to [r]: **fleuve**; [z] and [ʒ] lengthen vowels: **ruse, neige**; so do [r] and [v] in certain cases, without producing any other change: **lire, prouve.** Sometimes a vowel is changed owing to the anticipation of a following front vowel, the front of the tongue being lowered too soon, as in [ɛtɛ], a common pronunciation for [etɛ] = **était,** or being advanced too soon, as in [ʒœli] for [ʒəli] = **joli.**

When [u], [i] or [y] ends a word within a breath group, and before a vowel, it usually changes to [w], [j] or [ɥ], *e.g.* [i] in **qui est là ?** An [ə] in the same position is dropped, as also the [a] of **la**; in writing this is, as a rule, only indicated in the case of **la**, and in the monosyllables **me, le**, etc.

Other unaccented vowels also disappear now and then.

The [ə] may be inserted in order to avoid the clashing of three consonants, *e.g.* in **porte bien** [pɔrtə bjɛ̃]; **arc boutant** [arkə butɑ̃], **l'arc de Triomphe** [larkə d triɔ̃ːf].

Final vowels are short (**amie** in pronunciation = **ami**), though a little longer than short vowels preceding consonants.

§ 184. In GERMAN most long vowels undergo a change in the *place* of articulation when followed by r = [r (ᵊr, ᵊʳ, ə)]. In conversational German the close [e] and [o] sounds become more open, as in **her**, **vor**; and the long [i, y, ø] become somewhat deeper and duller, as in **mir**, **für**, **Stör**.

The short vowels are little affected by [r]. On the other hand their quality depends very much on the following consonants, which bring the vowel to a sudden close. This is particularly obvious before a final consonant, as in **ab**, where there is often no distinct consonantal sound at all, but only the on-glide.

There are no stressed vowels at the beginning of German words; the glottal stop always precedes.

With the exception of [ɑ] in the interjections **da**, **ja**, **na** and of 'unaccented e' = [ə], all final vowels are long: **ja** [jɑ:], **Anna** [ˀɑnɑ:], **Juni** [ju:ni:].

Consonants.

§ 185. In ENGLISH there is often assimilation of the *place* of articulation. Thus in [k, g] the closure is effected at various points of the tongue ridge and palate, as in **lack**, **lick**, or **log**, **leg**. Frequently [s] or [z] becomes [ʃ] before [ʃ], as in **this sheep**; there is partial assimilation in the change of [s] to [ʃ] before [j], as in **this year**. Sometimes a nasal is partially assimilated to a following sound; thus [n] may become [ŋ] in **can go**.—Most of these changes are confined to rapid colloquial speech.

The *manner* of articulation is variously affected by neighbouring sounds. When two identical stops meet, as in **coat-tail**, only one is spoken, and it is long only in emphatically distinct speech. Such combinations as [t]+[d], as in **sit down**, are often reduced to a simple sound also, the second sound being preferred as a rule. When two different stops come together, *e.g.* [k]+[t], as in **acting**, the second closure is usually made before the first is opened; this opening being then unaccompanied by an explosion. In cases like **open**, the [n] closure is made before the explosion of the [p]. When the stops [t] and [k] are followed by [l], as in **atlas**, **clean**, they often explode laterally, *i.e.* the opening is at the sides only. When three consonants come together, the middle sound often disappears, as in **jumped**, **acts** (in careless speech); particularly when a related nasal precedes and follows a stop, as in **don't know**.

Voiceless stops are aspirated before stressed vowels; but the aspiration is weak when another sound precedes the stop, which is closely connected with it; compare **take** and **stake**, **peak** and **speak**.

Assimilation of voiceless to voiced, and voiced to voiceless, sounds is a marked feature in the inflection of substantives and verbs; note the [d, t] in **lagged**, **lacked**, and the [z, s] in **bids**, **bits**. The plural forms in [vz], *e.g.* **loaves**, and in [ðz], *e.g.* **baths**, are similar cases.

Before and after voiceless sounds, the liquids often tend to lose their 'voice' partially, as in **plot**, **pelt**.

When voiced consonants occur initially they are usually voiceless at the very beginning; and when

they occur finally they become voiceless at the very end; zeal almost = [szi:jl], is almost = [izs].

Final r is, as a rule, preserved by 'liaison'; compare there and there is, and see § 103.

§ 186. In FRENCH the difference in the *place* of articulation of [k, g] is more marked than in English; compare cas with 'guttural' [k] and qui with 'palatal' [k].

In the *manner* of articulation French shows features which differ from our own. When two identical stops, *e.g.* [tt], come together they are pronounced long. When different stops meet, *e.g.* [kt], each has its own explosion, as in acte.

When there is voiced + voiceless consonant or voiceless + voiced consonant, we usually find progressive assimilation, *i.e.* in the first case both become voiceless, *e.g.* [bs] becomes [ps] in absolu, and in the second case both become voiced, *e.g.* [sg] becomes [zg] in second.—Liquids and semi-vowels tend to adapt themselves to a preceding voiceless sound, *e.g.* [pi, pj] becomes [pç] in pied.

Before a nasal consonant [b, d, g] are often nasalised, especially if a nasal vowel precedes; *e.g.* [d] becomes [n] in point de mire.

Initially we find long consonants as the result of contraction; thus [d + t] becomes [t + t] and then [t:] in de temps en temps.

Finally the liquids [l] and [r], following a consonant, lose their 'voice' and are often dropped, as in peuple, chambre. Emphasis may lengthen a final consonant, *e.g.* [l:] in seul!

Many otherwise silent consonants are preserved by 'liaison'; *e.g.* [t] in **petit à petit, attend-il.** The [l] of **il** is—in ordinary conversation—only retained in 'liaison'; compare **il a** and **il va.** Inconvenient combinations of consonants at the end of words are sometimes made easier by the addition of [ə], as in **reste.**

§ 187. In GERMAN the effects of assimilation are very similar to those in English.

Owing to a difference in the *place* of articulation we distinguish **ch** [ç], as in **ich,** and **ch** [x], as in **ach.** (Compare also the treatment of **g** in **lagen, liegen,** when it is pronounced as a continuant [lɑ:gən, li:jən].) The stops [*g*, k] also vary according to the next vowel sound, as in **kund, Kind.**

A [p] before [f], as in **Pferd,** is occasionally labio-dental; and [s] is sometimes assimilated to [ʃ] as in **Hausschlüssel.** These changes are, however, confined to rapid colloquial speech; as also the assimilation of nasals in cases like **Anbau, glauben,** which become [ʔambɑŭ], [glɑŭbm], or **Unkunde, merken,** which become [ʔuŋkundə], [mɛrkŋ].

As far as the *manner* of articulation is concerned, German agrees with English in the following cases: [t]+[t], as in **not tun**; [t]+[d],[1] as in **hast du**; [k]+[t], as in **Akte**; [t]+[l] and [k]+[l], as in **Bettler, Gaukler.**

When there is a stop + related nasal, the explosion of the stop in the oral passages is usually replaced

[1] Here [t(:)] and [d:] are both frequently heard.

by the opening of the velum, *i.e.* by a nasal (or velar, faucal) explosion (compare § 119).

When there is nasal + related stop and consonant, the middle sound is often lost, as in **pumpte**, especially if the third sound is a related continuant, as in **Lanze** [lɑn(t)sə].

German agrees with English in the aspiration of stops before accented vowels; compare [t^h] in **Tier** and [t] in **Stier**.

In a great part of Germany **g** is a voiced continuant between vowels, as in **lagen, liegen**; in some parts **b** also, as in **leben**.

The assimilation of voiceless sounds to voiced neighbouring sounds is regarded as incorrect, but is often found, *e.g.* **ss** in **Wasser, Strasse** is pronounced [z]; the opposite is more frequent, *e.g.* [ps] for [pz] in **Absicht**. Liquids before or after voiceless sounds, as in **kalt, klein**, lose their 'voice' partially or altogether

A nasalising—due to a premature lowering of the velum—is often found in words like **Signal**, when **gn** = [ŋn] instead of [gn].

When voiced consonants occur initially, they are usually voiceless at the very beginning; thus **so** almost = [szo:].

The only voiced consonants which occur finally are [l, m, n, ŋ, r]; hence **d** in **Land** is [t], though in **Lande** it is [d]. The same applies to the consonant ending a syllable, before a suffix beginning with a consonant; therefore **b** in **liebte** (and in **lieblich** also, though there is some variation here) = [p], while in

lieble it is [b] because l here belongs to the stem of the word. In lieb' ich we have [b], for it is not really final, inasmuch as it is within the breath group; but here we may also have [p], if the two words are spoken slowly and distinctly.

BOOKS FOR THE FURTHER STUDY OF PHONETICS

GENERAL.

W. Viëtor, *Elemente der Phonetik und Orthoepie des Deutschen, Englischen und Französischen.* (Henninger, Heilbronn.)

O. Jespersen, *Lehrbuch der Phonetik.* (Teubner, Leipzig.)

P. Passy, *Petite Phonétique comparée des principales langues européennes.* (Teubner, Leipzig.)

H. Klinghardt, *Artikulations- und Hörübungen.* (Schultze, Cöthen.)

D. Jones, *Intonation Curves.* (Teubner, Leipzig.)

ENGLISH.

W. Ripman, *The Sounds of Spoken English.* (Dent's Modern Language Series.)

D. Jones, *An English Pronouncing Dictionary.* (Dent's Modern Language Series.)

O. Jespersen, *A Modern English Grammar*, Part I. (Winter, Heidelberg.)

D. Jones, *The Pronunciation of English.* (Cambridge University Press.)

T. R. Lounsbury, *The Standard of Pronunciation in English.* (Harper.)

H. Sweet, *A New English Grammar*, Part I. (Clarendon Press, Oxford.)

TEXTS TRANSCRIBED.—W. Ripman, *Specimens of English.* (Dent.)

D. Jones, *Phonetic Transcriptions of English Prose.* (Clarendon Press, Oxford.)

W. Ripman, *First English Book.* (Dent.)

W. Viëtor and F. Dörr, *Englisches Lesebuch*, transcribed by E. R. Edwards. (Teubner, Leipzig.)

W. Viëtor, *A Shakespeare Reader.* (Elwert, Marburg.)

FRENCH.

B. Dumville, *Elements of French Pronunciation and Diction.* (Dent.)

P. Passy, *Les Sons du Français.* (Firmin-Didot, Paris.)

K. Nyrop, *Manuel Phonétique du Français. Parlé.* (Picard, Paris.)

TEXTS TRANSCRIBED.—J. Passy and A. Rambeau, *Chrestomathie Française.* (Teubner, Leipzig.)

S. A. Richards, *A Phonetic French Reader.* (Dent.)

J. S. Walters, *Épisodes en Action.* (Dent.)

W. Ripman, *Phonetic Section of First Steps in French and First French Book.* (Dent.)

C. Motte, *Lectures Phonétiques.* (Didier, Paris.)

D. Jones, *Poésies Enfantines.* (Teubner, Leipzig.)

GERMAN.

W. Viëtor, *German Pronunciation, Practice, and Theory.* (Reisland, Leipzig.)

T. Siebs, *Deutsche Bühnenaussprache.* (Ahn, Leipzig.)

G. Hempl, *German Orthography and Phonology.* (Trübner, Strassburg.)

TEXTS TRANSCRIBED. — W. Viëtor, *Deutsches Lesebuch in Lautschrift.* (Teubner, Leipzig.)

A. Egan, *A German Phonetic Reader.* (London University Press.)

Dent's First German Book.

For particulars of books issued in Dent's Modern Language Series, see the prospectus at the end of this book.

The attention of teachers is specially invited to the Sound Charts recently added to the Series.

THE APPLICATION OF PHONETICS IN THE CLASSROOM

By Walter Ripman

Experience of the practical application of a knowledge of phonetics has led me to draw up the following hints which may prove useful to teachers:—

General.

Test the *eyesight* of your pupils, so that they can see the writing on the blackboard and the sound charts.

Test their *hearing*, by finding out at what distance they can hear you whisper numbers; the left and right ears should be tested separately. Give front seats to those whose hearing is defective.

Ascertain whether any suffer from *adenoids*; the presence of these is a serious obstacle to the learning of a language.

Save your own voice

(*a*) by breathing properly; take breathing exercises every morning;

(*b*) by securing proper ventilation in the classroom, and by wiping the blackboard with a damp cloth;

(*c*) by articulating clearly instead of shouting;

(*d*) by not talking too much; let the pupils talk more.

If a pupil experiences difficulty in articulating a sound properly

(*a*) do not utter it aloud from a distance, but come up to him and utter it in a natural tone of voice;

(*b*) remember the difference between the adult voice and the child voice; often the pupil will imitate more easily if another pupil says the words than if the teacher does so;

(*c*) if the pupil does not succeed in getting the sound fairly quickly, do not keep the class waiting, but take him separately after the lesson.

Do not speak while writing on the blackboard or while turning your back to the class for any other reason.

If your class is large, divide it into sections for the purposes of chorus work.

Make sure that before the pupils learn anything by heart they can all pronounce it correctly.

ENGLISH.

In teaching the reading, pass from the known to the unknown; that is, start with the spoken language. There is no need for phonetic symbols at the outset.

With older pupils make use of phonetic symbols, to prevent their getting wrong ideas about speech sounds from the conventional spelling, to make them realise the inadequacy of this spelling, and to prepare the way for spelling reform.

If there is any weakness in articulation, make frequent use of a sound chart for the purposes of sound drill, letting the pupils utter individual vowels in chorus, and also combinations of consonants and vowels. Pay particular attention to full and uniform vibration of the vocal chords.

Co-operate with the physical instructor in ensuring good breathing.

Counteract the tendency to faint speech, common in boys and girls from 12 to 16 years of age.

When pupils recite, see that they adopt a free and unconstrained attitude; they should not adopt a half-standing, half-sitting attitude. It is best to let them face the class.

Cultivate the feeling that bad speaking is even worse than bad spelling.

FRENCH.

If the pupils have a real knowledge of the sounds of the mother-tongue, the pronunciation of a foreign language

presents much less difficulty than if this is not the case.

If they show ignorance of English sounds, it may be true economy of time to devote the first fortnight to the analysis of English sounds.

Teach the French sounds and their phonetic symbols, preferably by assigning to each pupil a French name. Each fresh name should contain not more than one fresh sound.

When all the sounds have been taught, get the pupils to co-operate with you in classifying them.

For the first term, at least, employ the phonetic transcription only. Let the pupils have a book in which there is only phonetic transcription. Experience shows that there is no danger in letting the pupils write as well as read the symbols.

Devote the first fortnight of the second term to the systematic transition from the phonetic to the conventional spelling. If this is done, the pupils learn the latter in a thoughtful manner, not merely by the exercise of the memory, and their spelling is the better for it.

During the first two years, at least, give a few minutes at the beginning of every lesson to sound drill, in order to "tune up" the organs of speech.

Occasionally give the pupils a passage in phonetic transcript to copy out in the ordinary spelling, as an alternative to dictation.

When a pupil is reading a passage in French, the other pupils should be accustomed to raise their hands when a mistake in pronunciation is made.

As often as possible the teacher should read a fresh passage before calling on a pupil to do so; the prevention of mistakes is better than the cure.

Insist particularly on: fully sonorous voiced stops and continuants; good liquids; tense short vowels; short vowels finally; uniform long vowels; full nasalising of nasal vowels; careful lip rounding in rounded vowels; distinct vowels in unstressed syllables; reading by word-groups, not by single words; stress less marked than in English; expressive pitch variations.

GERMAN.

If English and French have been taught with due regard to phonetics, the pronunciation of German is acquired with little difficulty.

Experience shows that in teaching this language the phonetic transcription and the conventional spelling can be used side by side from the beginning.

Most of the remarks made about French apply to German also.

Insist particularly on: the voiceless pronunciation of final [b, d, g]; short final [m, n, ŋ]; good liquids; uniform long vowels; careful lip rounding in rounded vowels; the use of the glottal stop; distinct vowels in unstressed syllables; reading by word-groups, not by single words; stress more marked than in English; expressive pitch variations.

For further suggestions see *The Early Teaching of French* and *Hints on Teaching German* in Dent's Modern Language Series.

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